Paper
TRADE JOURNAL

Oct. 12, 1950

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WILL PULLING SAGGING BELTS OVERSTRETCH OTHERS?

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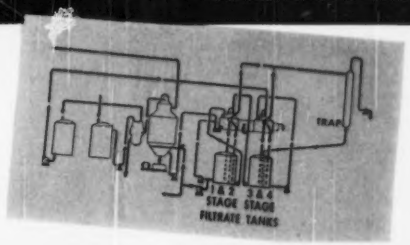
- ✔ Uniform pickup and sheet formation
- ✔ Large washing area—twice sheet-forming area
- ✔ Low point of sheet discharge—at centerline of drum



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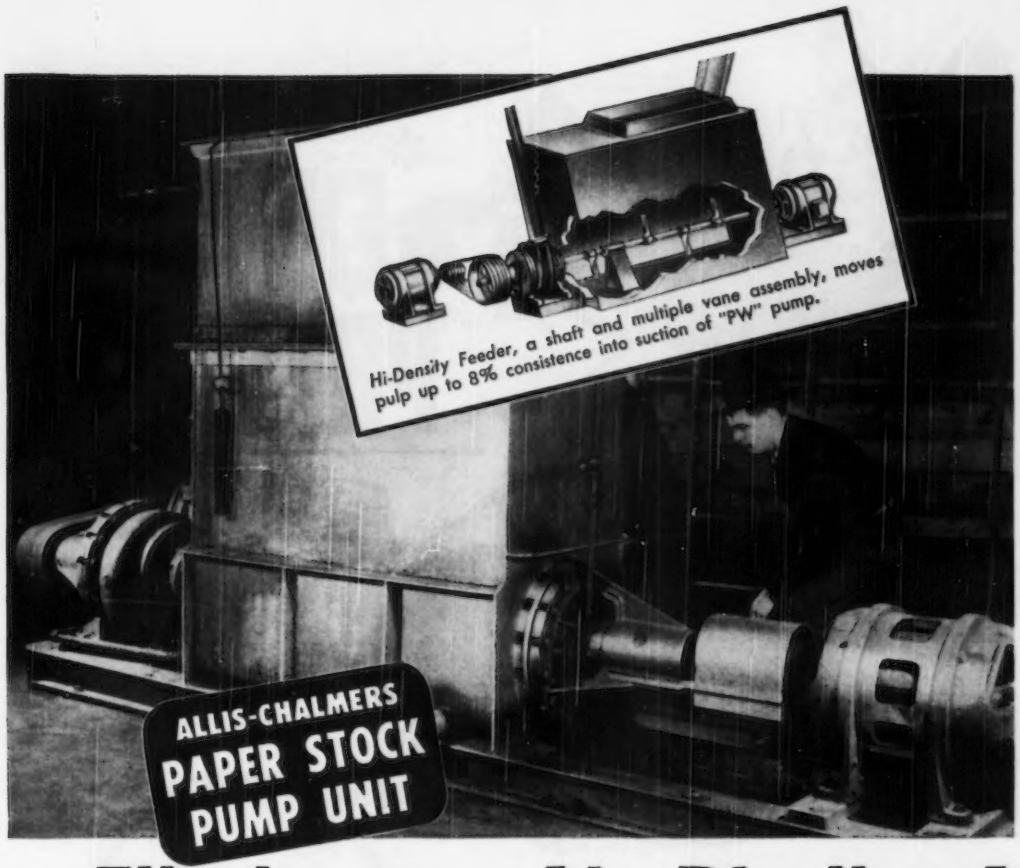
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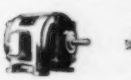
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AND OTHER EQUIPMENT FOR PAPER MAKING . . .

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FEATURES

	Page
Robertson "Man Of South"	11
The Newsprint Supply Situation	12
Power For MacMillan	13
Ask Pulp Be Exempt From Rating Provisions	18
Use of Sulphite Waste Liquor As Road Binder	19
Sag vs. Belt Length	28
The Oxidation of Sulphate Black Liquor	30
Sulphate Susceptibility	40
Fall Meeting on Fibrous Agricultural Residues	46

DEPARTMENTS

Our Business	7	Imports	56
Trends	9	Materials	56
News of the Week	11	Forestry	58
Industrial Section	19	New Paper Uses	58
Patent Abstracts	41	New Materials	60
Associations	45	New Literature	60
Converters	48	Obituaries	61
Merchants	48	Production Ratio Report	61
Suppliers	50	Classified Index	62
Financial Record	52	Advertisers Index	74
Prices	54		

DATES TO REMEMBER

OCTOBER 16-20: 38th Safety Congress and Exposition, Chicago, Ill.

OCTOBER 23-25: National Paper Trade Assn., Fall Convention, Stevens Hotel, Chicago, Ill.

OCTOBER 25-27: Alkaline Pulping Conference. George Washington Hotel, Jacksonville, Fla.

OCTOBER 30-31 NOVEMBER 1: 37th National Foreign Trade Convention, The Waldorf-Astoria, New York, N. Y.

NOVEMBER 2: Instrument Society of America, Hotel Bellevue-Stratford, Philadelphia, Pa.

NOVEMBER 27:—DECEMBER 2: 19th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

DECEMBER 3-6: American Institute of Chemical Engineers, Neil House and Deshler-Wallick Hotel, Columbus, Ohio.

JANUARY 15-18, 1951: Plant Maintenance Show & Conference, Public Auditorium, Cleveland, Ohio.

THIS WEEK

Dust-free motoring, a by-product of Pulp Mills.

Sulphur going up the stack? Read Tex Collins articles on "Oxidation of Black Liquor."

Are your belts sagging? See F. H. Rumble's article.

NEXT WEEK

"University of Maine" by Harry A. Kehoe

"Small Plant Set-Up for Insulation and Hardboard Manufacture" by R. T. DePan

"Modern Waste Paper Packing" by Colley S. Baker

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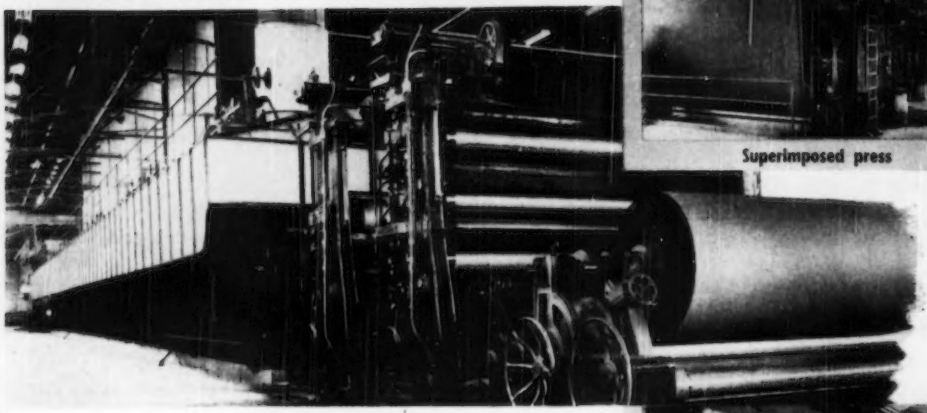
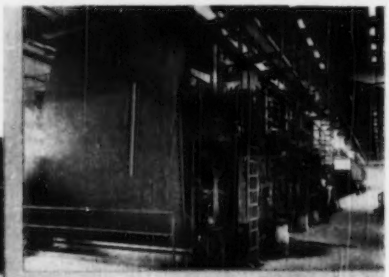
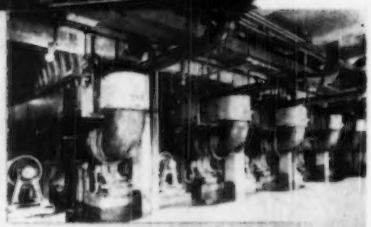
ALL THE LATEST FEATURES

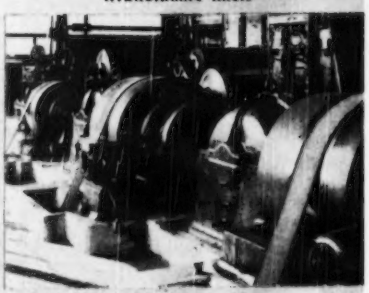




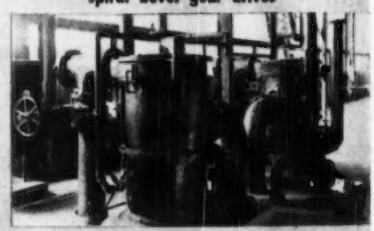
Superimposed press



HYDRONAMIC Inlets



Spiral bevel gear drives



Selectifier screens

Down the decades the most modern and most successful board machines have been those bearing the Black-Clawson name-plate. The 146", five-cylinder machine here shown, carries on that enviable Black-Clawson tradition.

Overflow type vats with large 60" molds.

All vats HYDRONAMIC Inlet equipped.

Open Type presses superimposed on vat section.

Dryers 48" Black-Clawson seamless type.

Drives on machine No. 0 and No. 1 B-C spiral bevel gear type.

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All drives air-flex clutch equipped for control from front of machine.

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Machine almost totally remote controlled from conveniently located panel boards.

Trim 130", Ultimate speed 600 feet plus, Ultimate capacity 150 tons plus, based on test liner.

Preparatory system by Shartle-Dilts, employing Hydrapulper, cleaning equipment including Selectifier screens; also HYDRAFINERS, Shartle pumps, agi-flo agitation, etc.

NOTE. No flat screens—not required where Selectifier screens are used.

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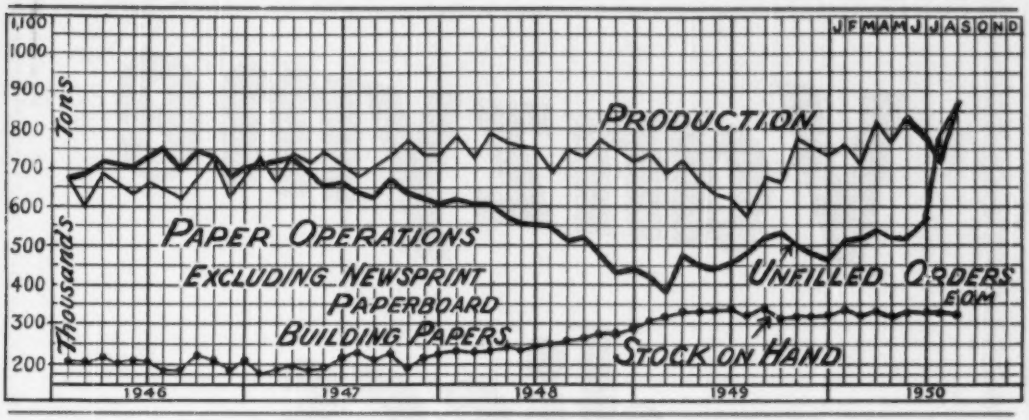
a
PRODUCT OF DILTS

Address all inquiries on paper machines, (Cylinder or Fourdrinier) to Hamilton.

Weekly Brief of Important Figures

OUR BUSINESS



Source	Production	WEEK ENDING Sept. 30, '50	Sept. 2, '50	Oct. 1, '49
APPA	Paper Production percent 6-day Capacity	106.6	105.9	96.3
	Unbl. Kraft Paper Production percent	98.6	94.2	85.8
NPA	Paperboard Operating Ratio percent inch hours	103.0	100.0	94.0
		August 1950	**July 1950**	**August 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ..... Tons	865,000	715,601	684,243
	New Orders ..... Tons	979,000	916,770	719,898
	Unfilled Orders ..... Tons	863,500	759,755	407,215
	Shipments ..... Tons	873,500	723,040	679,984
		August 1950‡	**July 1950**	**August 1949**
NPA	Paperboard Production ..... Tons	1,130,242	745,255	821,600
	New Orders ..... Tons	1,365,968	890,890	890,200
	Unfilled Orders ..... Tons	729,058	524,391	365,600
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	206	208	169
	Durable Mfg. Index	237	238	186
	Nondurable Mfg. Index	182	184	156
	Chemical Products Index	256	258	225
	Mfg. Food Products Index	172	164	172
	Printing and Publishing Index	150	169	133
ODC	Magazine Advg.-Printer's Ink Index	316	321	284
	Retail Sales Combined Adjusted Index	352.2	317.2	296.7
	Drug Index	225.3	222.0	233.8
	General Merchandise Group Index	368.7	310.3	285.6
	Grocery and Combination Index	410.9	378.9	358.0
	Prices Index			
BLS	Consumers Price Index[1]	172.5	170.2	168.5
	Wholesale all Commodities[2]	162.9	157.3	153.6
	Wholesale Foods[2]	171.4	162.1	161.3
	Commodities other than Farm Products and Foods[2]	151.5	148.8	145.1
	Wholesale Pulp and Paper[2]	159.1	155.6	156.8
	Purchasing Power of Dollar, Consumers Prices[1]	58.0	58.8	59.3
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	362.2	348.8	315.7
	Unemployment Compensation Initial Claims (M)	971	1,104	1,383
	Miscellaneous Carloadings-Thousands of Cars	1,433	1,846	1,233
	Electric Output (Million KW hr.)	31,626	31,608	27,946
PTJ	Average 32 P & P Common Stocks as of Sept. 26	$36.55	$32.45	$27.84
	Average Indicated Dividends Common Stocks as of Sept. 26	$ 2.43	$ 2.34	$ 2.17

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—August 1950 Estimated Figures
° Latest Month Available on Request
‡ For Five Weeks

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, October 11, 1950.

Container and Packaging Markets

Part II

Pacific Northwest

Shortage of materials, rising prices, and other uncertainties are factors plaguing set-up box manufacturers at this time. Eastern mills are reported withdrawing price quotations, necessitating separate negotiations on each order contemplated.

Some board mills are selling on an allotment basis. The feeling among independent box makers is that mills want to convert the available supply of boards themselves rather than sell to independent converters.

Stores have now purchased Fall requirements and the set-up box business has been equal to or slightly better than last year.

Small candy manufacturers appear to be caught in a squeeze. Rising costs for boxes, ingredients, and labor are pressuring from one side and resistance of buyers to higher retail prices is effective on the other side. Most small operators are not financed well enough to speculate or hedge on the present market situation.

Distributors of *kraft paper and bags* are at the peak of their season and movement is very satisfactory. No particular scare-buying has developed and sales are not on an allotment basis.

South and Southeastern Area

Paper bags are being aggressively promoted in several fields which previously used cotton and burlap, and this competition may substantially curtail textile bag production.

The second quarter of 1950 shows production and shipment of *corrugated containers* 20 percent higher than for a similar period of a year ago. The gain over the first quarter of 1950 is estimated at 5 to 7 percent. Present supplies of raw materials are ample, but anticipated demand is expected to draw heavily on these existing stocks. The price of raw materials has increased during the past year and has been reflected in the quotations to users. Prices held fairly stable during the second quarter, with recent general rises from 5 to 20 percent. Backlogs of unfilled orders are becoming larger, but deliveries are being completed within 2 or 3 weeks. Users are carrying larger inventories. The outlook is favorable.

There was little change in production and shipments of *folding boxes* during the second quarter of 1950 compared to the first quarter. Raw materials are in adequate supply with inventories in the Atlanta area running about 10 percent less than a year ago. The demand situation was comparable to the first quarter, but it is predicted that the third quarter will show considerably more activity due to a buying wave. New orders are being filled in about 5 weeks, as compared to a normal delivery of 3 to 4 weeks. Other factors affecting the industry, such as transportation and labor, have been satisfactory.

Prices of folding boxes are on the uptrend, and the increases range from 5 to 7 percent, compared to the like quarter in 1949.

Paper bag and multi-wall container prices have advanced 5 percent in the past 30 days. Wholesalers and jobbers reported a large volume of orders following the outbreak of the Korean crisis. This buying splurge has subsided, but wholesalers state that kraft paper bags remain in good demand, with many mills reported to be 40 days behind in deliveries. Some mills have withdrawn from the open market to catch up on orders, while other mills are quoting prices only at prevailing levels at the time deliveries are made.

Middle Atlantic States

The *paper box and carton* industry which had experienced a modest slump in orders in June has since literally been deluged with firm business and inquiries. There is some difficulty in ascertaining the degree to which the changed tempo is due to a better-than-average and consolidated seasonal pick-up as compared to the flurry of orders resulting from scare buying. However, an external influence undoubtedly giving impetus to the gain was the report, both hinted and openly stated, that customers expected an increase in price due to the imminent rise in board costs. This prospect of higher quotations has led to considerable anticipatory buying.

Box makers report that board mills are quoting prices on an order basis only, with the result that quotations hold only for the quantity of material requisitioned. Printed price schedules have long since been voided. This condition which is characterized by an "if-you-order-now-the-price-is" qualification, is known to box and carton purchasers and, they in turn, are attempting to avoid being caught short.

The *paper container* trade in this area is able to make fairly quick deliveries, but board mills are reported as becoming slow and independent in their attitude toward prompt shipments. One of the devices to which they have resorted, box producers indicated, to reduce operating costs, has been the consolidation or basketing of orders for several box and carton companies. In the case of clay-coated stock, for example, producers will wait until orders representing a run of ten to twenty tons have been accumulated from several sources before they will go into production. In this manner producers obtain the economies available through large-scale output. Formerly, a single run of five tons of this stock would have been considered sufficient to start through the mill.

Another development that has occurred since July 1 has been the complete abandonment of tentative plans for new packaging. Once again the wartime concept that the package is of secondary importance where the availability of goods is concerned, is in force.

The current situation in the *miscellaneous container* field seems to parallel that in the box and carton trades. There has been a sharp and sudden spurt to cover inventory requirements, a fact admitted by one large buyer who states that he has shifted his policy from one of carrying stocks at an irreducible minimum to one of building up inventories to at least a normal working average. In practice, this has meant a noticeable increase in commitments. Possible further advances in prices are also causing a reappraisal of buying practices. *Multi-wall bag* quotations increased on July 14, and cartons, along with fibre drums, were also expected to rise.

† *Source: Bureau of Foreign & Domestic Commerce, Industry Report, Vol. III, No. 3.*

Materials

Casein.—Sag in market undertone noted as international news improves. Buying held to immediate needs. Argentine prices ease 2 cents. New production largely under contract.

Salt Cake.—Immediate price advance of $2 per ton denotes strength of market and higher costs.

Starch, Potato.—Ample supply of Maine and Idaho product priced at $5 per cwt. c.l. works.

Tapioca Flour.—Heavier paper demand noted for Brazilian and Siamese grades because of short cornstarch supply. Strength noted in primary markets.

Twines.—Coarse grades of soft fibre twines lifted 1¼ cents, fine grades 2½ cents. All orders accepted at price prevailing, time of shipment.

Rosins.—In line with higher asking price for CCC loan stocks, gum rosins advance 48c, October 4. Brisk buying of Govt. stocks reported at new prices of $7.15 for grades N through G—an advance of 55c. Sales of 10,900,000 pounds were rolled up in September. Some 100,000 drums of 517 lbs. each are on hand.

Paperboard Production (Tons)*

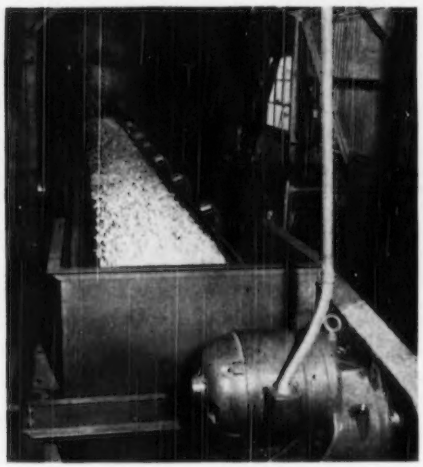
	Sept. 30 1950	Sept. 23 1950	Oct. 1 1949	Month of Sept.
Production	236,422	229,731	206,834	877,945
New Orders	253,120	219,191	214,138	872,012
Unfilled Orders	714,877	700,166	360,897	714,877

Source: NPA.

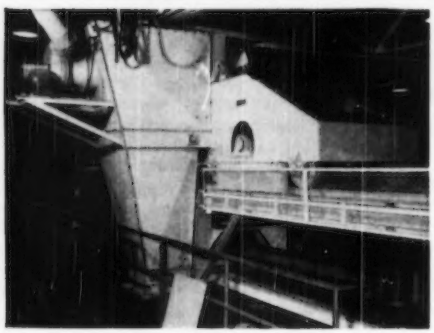
at FIBREBOARD'S New Mill ... Another Handling Job Handled by LINK-BELT

Aerial view of part of the mill buildings and chip silos suggests the extent and importance of the conveying system.

Newest, and only chemical pulp mill in California, Fibreboard's San Joaquin Division board mill features many innovations in pulp mill practice. Conveying and feeding operations, however, are performed by time-tested and job-proved Link-Belt conveying machinery.



Chips from kraft screens on their way to bleached kraft side, via Link-Belt Belt Conveyor.



Link-Belt Chip Tripper, feeding chips to digesters on the bleached kraft side.

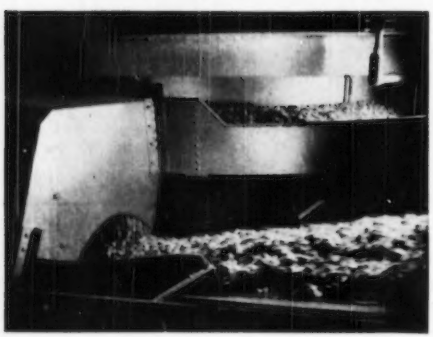
In this completely new mill, the chip and hot lime conveying equipment was supplied by Link-Belt, including twelve chain conveyors and chain feeders, six rotary plate feeders on chip silos, two chip washer units employing Link-Belt Screw Conveyors, and nine belt conveyors.

Hot lime is transferred from the kiln to storage bin by a Link-Belt Drag Chain Conveyor, and a centrifugal discharge bucket elevator.

Selection of Link-Belt equipment for these important applications is significant testimony to the established quality of Link-Belt products long accepted as standard in the paper and pulp industry.

Link-Belt engineers are ready to assist you in applying these efficient products to your handling problems.

12,128



Chips for bleached kraft side are fed from storage silos by Link-Belt Rotary Plate Feeder to belt conveyor.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Johannesburg. Offices in Principal Cities.

LINK-BELT

CONVEYING MACHINERY
"THE COMPLETE LINE"

News of the Week

Paper TRADE JOURNAL

MOBILE MILL SOLD

MOBILE, Ala. — Stone Container Corp., of Chicago, took over operation of the Mobile Paper Mill Co., paperboard manufacturing plant, October 2.

The Chicago concern acquired the local plant for $1,362,000 in U. S. District Court, and assigned the operation to a partnership known as the Stone-Mann Paper Co.

According to Marvin Stone, general manager of the Stone Mann Paper Co., the Mobile plant will continue to produce paperboard, and will sell it to Stone Container Corp. plants.

Mobile Paper Mill Co. ran into financing difficulties several months ago, and the Reconstruction Finance Corporation advertised a foreclosure sale. The new owner assumed RFC mortgages totaling $808,000. The plant employs approximately 125 workers.

NEW MACHINE FOR EVERETT

EVERETT, Wash. — Preparations are being made for the installation of a new paper machine at the Everett Pulp and Paper mill according to an announcement just made by William J. Pilz, the company's president.

The machine, which will be the fourth to be installed, will increase paper tonnage at the Everett plant fifty percent and will bring production to approximately 50,000 tons of paper per year. The number of employees will be increased by 150 to 200 and the investment will be several million dollars.

The new equipment will manufacture grades of paper similar to that which the company is producing at the present time; namely, book papers, Everett duplex super label, Seaplane offset book, Mimeograph and Writing papers.

The new unit has a width of approximately 160 inches and comes equipped with all the necessary modern devices for the making of various grades of high quality paper.

Pusey and Jones Co. of Wilmington, Del., is the manufacturer of Everett's latest equipment addition. It was this concern that installed the three paper machines now operating in the mill, their first machines having been installed in Everett in 1891.

S. D. WARREN IMPROVEMENTS

WESTBROOK, Me.—S. D. Warren Co. is constructing a lime kiln and modern four-story building 90 by 50 feet to replace its bleach plant. It is a $2 million program.

Want Controls?

It is reported that many manufacturers are *not* bidding on Government paper requirements and that a few are actually supplying more than their fair share.

Is there anyone who thinks that the Government won't get what it wants?

Is there anyone who wants controls? There is no quicker, easier way to get control than to fail in supplying the Government requirements.

Let's get on the ball. Filling these needs voluntarily will hurt a lot less than by compulsion.

FIBREBOARD MODERNIZES

PORT ANGELES, Wash. — Resident Manager Vernon Basom of the Fibreboard Products Inc. plant at Port Angeles announced on October 4 that the plant has plans for a quarter of a million dollar modernization program.

GAIR RESTARTS MACHINE

NORWICH, Conn.—The No. 1 papermaking machine at the Thames river division, Robert Gair Co. which has been undergoing overhauling for the past nine weeks, the result of being shut down since May 27th, will start production within the next ten days.

Restarting will add about 100 to the plant's working staff, bringing the plant to its employment peak of 500.

The machine, when in operation, will turn out about 100 tons of finished material in 24 hours of three eight-hour shifts.

WEYERHAEUSER EXPANSION

LONGVIEW, Wash. — The Weyerhaeuser Timber Co. has announced plans to increase the capacity of pulp plants at Longview. The additional output will almost double the Kraft mill's present production rate of about 220 tons daily, R. E. Baker, manager of the Longview pulp division installation, announced.

Installation of additional equipment to boost total daily output of the mill to about 400 tons of bleached Kraft pulp, is expected to begin next summer and should be completed during 1952.

It is thought that 70 or 75 additional men will be employed when the additions are completed.

The company now produces approximately 500 tons of Kraft and sulphite pulp daily at the Longview operation, and also produces paper board at Springfield, Ore., and bleached sulphite pulp at Everett.

PUBLISHERS PAPER EXPANSION

OREGON CITY, Ore.—Additional capacity in the break-down section of the wood plant of Publishers Paper is planned and the major machinery has arrived for installation.

The wood plant receives several kinds of logs. One of these varieties is largely from farm woodlots and is of eight-foot length and small circumference. The larger hydraulic barker now in use will be relieved of processing the smaller logs by installation of a second barker, especially designed to handle the small logs.

FUEL INVENTORY CONTROL

WASHINGTON, D. C.—A fuel inventory control order for electric utilities using large quantities of either liquid or solid fuels, is being prepared by Interior Department, acting under the recent delegation of emergency powers by the President, based on the National Production Authority control orders.

The order, it is understood, will be aimed at insuring supplies of utility fuels for industries handling major defense orders, through channeling supplies to areas of such production.

ROBERTSON "MAN OF SOUTH"

Reuben B. Robertson, Champion Paper & Fibre Co., was elected fifth annual "Man of the South" for the year 1950. He won by overwhelming majority votes over the nation in annual pole by the editor of Dixie Business Magazine. Mr. Robertson was named one of the South's fifty foremost leaders in 1949 by Dixie Business, celebrating their magazine's 20th anniversary. From that group Ernest Kurth, president of Southland Paper Mills, Lufkin, Texas, was named "Man of the South" for 1949 with 5,000 votes. Fifty more of South's leaders were named this summer, and from group of one hundred Robertson received vast national vote as well as the southern vote. This is the second year a paper man has been selected.

COLTER SUCCEEDS ROBINSON

OTTAWA — Ashley A. Colter, of Fredericton, N.B., has been elected a director of Canadian International Paper Co., filling a vacancy caused by the death last month of Howard P. Robinson, of Saint John, N.B.

The Newsprint Supply Situation

CRANSTON WILLIAMS

Speech of Cranston Williams, General Manager of the American Newspaper Publishers Assn. at convention of Pennsylvania Newspaper Publishers Assn., Harrisburg, Pa. on October 7.

There are some things publishers can do about the newsprint supply situation and those are the things I want to discuss with you. The overall newsprint situation is tight—very tight. For some publishers it is quite painful. This appraisal of the situation should not be construed by some of our friends competing for the advertising dollar to mean that daily newspapers generally are unable to accept advertising schedules. Newspapers generally can take care of all advertising schedules subject to arrangement between the particular newspaper and the advertiser or agency for optional insertion dates.

A considerable amount of newsprint tonnage is being lost for use by publishers through the present manner of individual publishers sending in their specifications to mills for roll sizes. We get information from several mills that they could increase their annual deliveries to publishers by several thousand tons each year if publishers would cooperate with the mills in the specifications of the different roll sizes —take fewer full rolls and more three-fourths, one-half and one-quarter width rolls. On top of that, we are told that some publishers wait until the last minute to send their specifications to the mills and then ask for changes which disrupt the maximum flow in production by the mills.

It seems to me that the newsprint supply is a top priority matter for every publisher and I suggest that each newspaper executive carefully check immediately on his present methods of sending specifications to the mill each month and discuss with the mill the possibility of increasing the tonnage available by acceptance of a proportion of roll sizes that would mean maximum production as well as maximum delivery.

Another way in which newspaper executives can help is to make certain that every box car is cleaned out after the newsprint shipment is unloaded. In many instances this will save 24 hours of delay in putting the empty car back into use.

After the car is cleaned out and the railroad is notified that the empty is ready to be moved then make a notation so as to have a record on your experience with the railroad in moving those empty cars. Frequently just a phone call to the railroad agent will help expedite handling.

While vigorous efforts are being made to build more box cars, there is nothing to indicate that our troubles will be over any time soon. With the movement of grain both in Canada and the United States we can expect additional pressure on the available car supply.

Generally speaking, the backlog of tonnage produced in Canada during the Canadian railroad strike which ended more than a month ago is still in storage in Canada. In other words, the Canadian mills have been getting only enough empty box cars to move their current production. It will be tragic if that newsprint now in storage is not moved out before the season of navigation ends this winter which is only a few weeks away The tonnage is needed by publishers, but the further danger is the fact that should there be a temporary freight car shortage during the winter the mills would have no available place for storage unless their present tonnage in storage is cleaned out.

While newsprint continues to be in short supply—and no early relief is in sight—there is no justification now for any kind of government rationing.

The rate of newsprint consumption so far this year has surprised all—producers and consumers alike. At the end of 1949, the pressure had eased; spot newsprint at high prices had disappeared and there was even some tonnage from European mills offered as low as $85 per ton delivered in New York City with no takers. Some North American mills had salesmen out seeking additional contracts.

Many well informed people then felt that a 2 percent increase in consumption during 1950 over 1949 was all that could be expected. Mills adjusted their output accordingly because newsprint is largely made to order to a publisher's specifications. The Canadian mills, which supply 80 percent of U. S. requirements produced less each month for the first four months of this year than they did during the corresponding months of 1949. That production loss could not be regained.

As far back as January, we advised publishers that our estimates of the newsprint situation showed clearly that U. S. publishers would be in an uncomfortable position in 1950. Statistics each month confirmed that estimate.

By the end of August (our September figures are just now being assembled) we estimated total newsprint consumption by all users had exceeded the first 8 months of 1949 by nearly 7 percent. In terms of tonnage, the consumption increase amounted to 247,218 tons, more than twice the output of a mill like Coosa River in Alabama or Southland in Texas.

Production at all North American mills, going to many other users besides customers in the U.S., had risen only 1.7 percent or 69,626 tons during the same period. The increased supply for the U.S. has come largely because of a drop in Canadian exports to other markets due to the dollar exchange situation and because the new Coosa River mill in Alabama with a capacity of 100,000 tons came into production in January of this year.

However, it should not be forgotten that Canada has contracts with Great Britain and some other countries for tonnage in excess of that which is now being shipped and should the dollar situation change it is possible that those contracts, or a part of them will have to be met, with a resulting decrease in shipments to the United States. As a matter of fact, it is reported that Great Britain has already indicated it will take 75,000 tons of newsprint during 1951, which is an increase of 50,000 tons over 1950 shipments.

There is no safe margin between supply and demand. Publishers are consuming newsprint as fast as mills running at capacity can supply. Stocks in the hands of publishers are too low. Any interruption in the flow of newsprint from mill to consumer, like the recent rail strike in Canada and the present box car shortage, causes immediate distress to many publishers. We are heading into the months of high newsprint consumption with low stocks on hand by comparison with all years in the past. There is the great hazard of bad weather causing delay in shipments.

More production is needed but the immediate concern of every publisher, large and small, is to stay within his regular supply and keep out of the spot market. Publishers are urged not to bid against each other for the relatively small supply. That leads only to compounding distress.

And in this connection I should like to point out that as early as 1945 and before controls were lifted we urged all publishers to make firm contracts with a newsprint mill for their supply, and we urged those newspapers whose consumption was too small to make mill contracts to assure themselves of adequate tonnage by firm commitments

with established and reputable merchants and jobbers.

A spiraling spot market can lead to demands for government controls and we all know from recent past experience that government controls rarely satisfy anyone. And certainly controls make no more newsprint available—the government does not produce a pound of newsprint. Controls only take away from some to give others who frequently are never frugal.

When controls on consumption under L-240 were removed on December 31, 1945, every publisher was free to use all he could get of the limited supply then available. The ANPA then in cooperation with regional and state associations gave assurances that no bona fide newspaper — daily or weekly — would be forced to suspend publication solely because of a lack of newsprint. The PNPA under the direction of the late Bill Hardy offered invaluable aid to every newspaper in Pennsylvania in distress. Aid was given and a source of supply found for every legitimate case of newsprint need in spite of the fact that neither the ANPA nor any state association bought or sold a pound of newsprint. Hundreds of newspapers all over the country were helped—manufacturers and distributors cooperated. Many newspapers loaned or sold newsprint at cost out of their own limited supply to their neighbors.

To this day—5 years after the end of L-240, no bona fide newspaper has been forced to suspend solely because of lack of newsprint.

None of the newspaper associations, however, made any pledge to supply all the newsprint that was desired by any bona fide newspaper. The pledge was to see that no newspaper was forced to suspend publication because of being cut off by a supplier. Today the same pledge must be given if it should become necessary. Newsprint could be secured only in sufficient quantity in these days to enable a newspaper to continue publication with a few pages as no association with a knowledge of the facts would contemplate a pledge to supply all the newsprint a publisher might desire and the publisher might not be frugal in his use.

STUDY COMBINES ACT

OTTAWA. — In view of the widespread publicity given in the United States to charges of supposed or alleged combine in pulp and paper industry, which were flatly denied in Canada, there is considerable interest in the submission made by the Canadian Manufacturers' Assn. to the special committee set up by the Canadian Government to study in general the Combines Investigation Act of Canada, emphasizing chief defects of law.

Pointing out that the original intention of the Act was to distinguish between combines and ban only those which were detrimental to the public, the brief claims this has been lost sight of by the courts. Various combinations have been condemned, says the CMA, on finding a substantial lessening of competition, without going on to determine whether this operated to the detriment of the public or not.

A number of forms of joint action which should not be regarded as being detrimental to the public are specified by the association. It names such things as statistical and economic research by an industrial group, establishment of standard forms, standardization and simplification of products and methods, patent cross-licensing and sub-licensing and joint enterprises too costly to be undertaken by a single concern.

The association recommends that there should be set up a tribunal to which a group of traders proposing to take certain joint action could go to get an opinion as to whether or not what is proposed is within the law. In the event of approval being given, the parties should be guaranteed immunity from prosecution under the Act.

It also maintains that the commissioner's official report should not be published until after the trial because otherwise it would prejudice the trial and might give unfavorable publicity to an innocent firm. The confusion from having both a Combines Investigation Act and Section 498, 498A of the Criminal Code should be removed. The right to trial by jury for a corporation should be restored and the laws of evidence with respect to a corporation should be put back on much the same basis as with respect to an individual.

CANADIAN EXPORTS

OTTAWA—Canadian Government announces its latest survey shows exports of woodpulp from Canada advanced to $17,324,000 during August this year compared with $13,141,000 a year ago in same month and reached a cumulative total of $124,048,000 in first eight months this year as against $113,261,000 last year in corresponding period.

However, official reports states exports from Canada of newsprint paper declined to $38,909,000 during August as against $40,786,000 last year but still increased to a total of $313,564,000 in the first eight-months period compared with $277,500,000 a year ago in this period, though shipments out of Canada of other paper increased to $1,403,000 during August as against $1,334,000 a year ago but dropped to a total of $10,129,000 in first eight months this year as against $13,621,000 last year.

Official report does not disclose quantities shipped and only offers values of such shipments in the latest period under review.

HUDSON NAMES THORNHILL

OTTAWA—Frank W. Thornhill has been named vice-president of the Hudson Paper Co. (Vancouver).

POWER FOR MacMILLAN

VANCOUVER, B. C.—With the opening of the new sulphate pulp mill of the H. R. MacMillan Export Co., Harmac, near Nanaimo, B. C., the B. C. Power Commission has completed connections for the supply of hydro electric energy from its John Hart Development at Campbell River.

Power from the station is carried over a 132 Kv transmission system from Campbell River in triangular circulation transmission system to step-down stations at Alberni and Nanaimo.

Transformer Station (TS3) close to Nanaimo steps down the power from 132 Kv to a 60 Kv subtransmission voltage. This station has just been expanded and has a total of 34,800 Kva transformer capacity in two duplicate single phase banks, connected 132,000 volts Grd. Y—60,000 volts Grd. Y, with 12,000 volt delta tertiary. It is from this station that the pulp plant derives its power.

Demand of the H. R. MacMillan pulp mill has been estimated at 8000-9000 Kw. To serve this large industrial load from existing 60 Kv circuits was neither practical nor sound. Instead the Commission has constructed a 60 Kv express feeder to serve the mill. This has the distinct advantage of making the H. R. MacMillan Export Co. independent of outages which may occur on other subtransmission circuits. Likewise, customers on the other circuits are not subject to such momentary line voltage fluctuations, minor though they will be, caused by starting of large mill motors, such as the 1500 HP chippers.

Sixty Kv power over this line is transformed to 13.8 Kv at the mill site through a 12,000 Kva transformer station newly constructed by the Commission, and delivered through a low tension breaker onto the 13,800 volt bus of the company's indoor distribution sub station.

The line from Nanaimo TS3 to the mill transformer station is 10.5 miles long and consists of 2/0 A.C.S.R. conductor carried on pin-type insulators in triangular configuration on wood poles. The line is radially fed off the Nanaimo TS3, 60 Kv bus through a 69 Kv Canadian Westinghouse type BPOB oil circuit breaker. Type CO overcurrent relays protect the line against phase and ground faults.

The Commission's 12,000 Kva transformer station at the mill site is made up of three C.G.E. 4000 Kva 60,000—13,800 volt single phase 60 cycle transformers connected delta-delta. Buswork and 69 Kv gang operated air break switch on the high tension side are supported on a double-tower single-girder steel structure. Lightning arresters are 73 Kv maximum rated, of the Thyrite type.

From the low tension bus, power is fed underground to the adjoining distribution sub station of the company through a short run of three single conductor 600,000 CM 15,000 volt

P.I.L.C. cables. Cables are carried in 3" fibre conduit, concrete encased, to an incoming line metalclad breaker section feeding onto the company's bus.

While the incoming line section only of the metalclad switchgear is owned by the Commission it comprises one of several sections making up a co-ordinated switchgear assembly. Feeder and control power sections are property of the company.

The metalclad switchgear, fabricated by Cemco, contains 150,000 Kva interrupting capacity breakers, rated 600 amp 15,000 volt, solenoid operated from a common a.c. rectifier and with 24 volt battery shunt trip.

The incoming line section is complete with line voltmeter and voltmeter switch, line ammeter with ammeter switch, breaker control switch and three type IAC overcurrent relays. Mounted on it also are a recording KW and RKVA meter and polyphase watthourmeter for indicating and metering, for billing purposes, the power and energy delivered to the company.

While the company has been served over a 23 Kv line with small temporary transformer bank during the period of mill construction, the permanent installation was completed and cut into service at the beginning of the year.

INSTALL PRECIPITATOR

MUSKEGON, Mich.—A new electrical precipitator which will remove 90 per cent of sodium products now present in stack gases which emanate from the Central Paper Co., will be installed and operating by Nov. 15. Relief from flying ash and odors will come about 45 days later than originally planned because of installation difficulties.

At the same time, an announcement was made by the company that a special dividend of 5 per cent has been declared, payable in common stock Oct. 31 to stockholders of record Oct. 15. Fractional share portions of the stock dividend will be paid in cash on the basis of value of stock about three months ago, which was approximately $13.70 a share.

PROCUREMENT AUTHORIZATIONS

WASHINGTON, D. C.—ECA procurement authorizations totaling over $500,000 for paper and related products, excluding newsprint, were announced this week.

The total included $335,000 for purchase in this country, and $175,000 from Canada, all shipment to France.

GREAT LAKES CARLOADINGS

BUFFALO, N. Y.—Railroad carloadings of paper and allied products in the Great Lakes Region during the final quarter of 1950 are estimated by the Great Lakes Regional Advisory Board at 16,621, an increase of 11.9 percent over the corresponding period of 1949.

FIGHTING PAPER WANTED

Invitation for bids has been issued by the New York Quartermaster Procurement Agency, 111 East 16th street, New York 3, N.Y., on QM-30-280-51-465, covering Paper, Teletype, Opaque (various), 35,050 rolls, and Paper, Teletype, White, 38" Dia. Single Copy, 17,000 rolls.

Bids will be opened November 2, 1950, at 1:30 P.M. at the New York Office. Delivery Schedule: November 30, 1950. This procurement is for the U.S. Navy.

QM-30-280-51-419, covering Paper, Typewriter, Manifold, Rag, 50 Per cent, Unglazed, Substance 9, Colors: Green, White and Yellow, 8" x 10½", 57,500 reams.

Bids will be opened October 31, 1950, at 1:30 P.M. (EST) at the New York Office. Delivery Schedule: To be completed by January 31, 1951. This procurement is for the U.S. Marines.

QM-30-280-51-408, covering Paper, Mimeograph, Wood Pulp, Chemical, Substance 16 and 20, White, (various sizes), 471,088 reams.

Bids will be opened October 30, 1950, at 11:00 A.M. (EST) at the New York Office. Delivery Schedule: December 31, 1950-May 31, 1951. This procurement is for the U.S. Army.

QM-30-280-51-427, covering Paper, Manifold, Substance 9, Chemical Wood, Pink, Size 8" x 10½", 5,000 reams.

Bids will be opened October 30, 1950, at 11:30 A.M. (EST) at the New York Office. Delivery Schedule: To be completed by January 31, 1951. This procurement is for the U.S. Marines.

QM-30-280-51-444, covering Paper, Typewriter, Bond, Chemical Wood, Grade B, Sub. 16, White, Size 8x10½", 488,250 reams. Bids will be opened November 1, 1950, at 11:00 A.M. at the New York Office. Delivery Schedule: December 31, 1950—June 30, 1951. This procurement is for the U.S. Army.

ASK WAGE INCREASE

ALBANY, N. Y. — The top AFL unions in the pulp and paper industry in the United States and Canada plan to ask for wage increases "within the next few weeks" it was announced here.

The International Brotherhood of Paper Makers and the pulp, sulphite and paper mill workers, said an upward trend in the cost of living since the outbreak of war in Korea made it "necessary and desirable" that existing wage structures be "re-examined and re-evaluated."

The unions told manufacturers that wage increases negotiated before the war have been outstripped by living costs.

Both unions represent some 190,000 workers in the United States and Canada.

ASK FOR TEMPORARY BRIDGE

PITTSFIELD, Mass., Sept. 30 — The Hurlbut Paper Co. has offered to pay half the cost, up to $5000, for a temporary bridge in South Lee, if a new permanent bridge is erected with Chapter 90 funds. At a recent road hearing, Lee sought a new $65,000 bridge there.

In a letter to the state public works commissioner and the County Commissioners E. A. Sitzer, president of the firm, said that proposed expansion by the company will increase the tonnage use of the bridge by 50 to 60 per cent before next May. At the present time, he said, incoming tonnage averages 150,000 pounds a month, and outgoing tonnage, 600,000 pounds.

Mr. Sitzer told the commissioner that the bridge in question is the only entry to the plant which can be used by large vehicles. If it were washed away in a flood, he warned, the plant would be isolated.

He said that construction of a new bridge might require two or three months and that continued operation of the plant would require that a temporary structure be erected with a 15-ton capacity. It was toward this temporary bridge that he offered to pay one-half the cost, up to $5000.

CANADIAN DOLLAR SITUATION

OTTAWA—The action of the Canadian Government in abolishing the 10 percent premium on U.S. dollars in Canada and setting the Canadian dollar free to find its own value in relation to U.S. funds has been accompanied by an official announcement that all remaining import restrictions against U.S. goods would be abolished effective January 2, 1951. These moves are expected to affect the operations of the pulp and paper industry since it would mean that Canadian exporters will get less for their shipments into the U.S.

However, inquiries indicate that it is unlikely that these developments will bring any change either in the quantities of materials exported by the Canadian pulp and paper industry into the United States, or in prices.

This exchange development also means that Canadian pulp and paper industry will be paying less due to exchange rates, for supplies imported from across the international border and this may encourage more such imports.

TRUMAN NAMES NORTON

SYLACAUGA, Ala.—Ed Norton, director of Avondale Mills, operating several mills in Alabama, and president of the Coosa River Newsprint Co. of which the Avondale Mills is a stockholder, has been appointed by President Truman to the Federal Reserve Board. Mr. Norton will make his home in Washington for the present.

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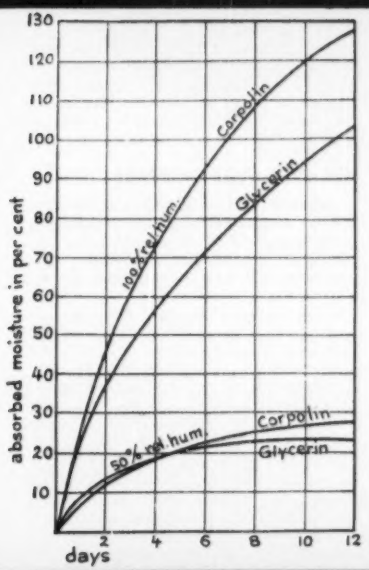

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IRELAND'S IMPORTS

DUBLIN, Ireland—In July, 1950, the Republic of Ireland imported paper and cardboard, etc., to a total value of £440,265, as against £282,390 in July, 1949. This makes a total import value of £2,708,226 for the first seven months of 1950, as against £1,872,834 in the corresponding period of 1949.

Of the July, 1950 imports, papermaking materials amounted to 2,062 tons, valued at £67,913, against 1,230 tons, valued at £28,394 in July, 1949.

Coated printing paper valued at £4,279 was imported in July, 1950, and at £6,182 in July, 1949.

Newsprint imports rose from 45,917 cwt. in July, 1949 to 66,680 cwt. in July, 1950, the respective values being £83,790 and £140,207.

Other uncoated printing paper imported in July, 1950 was valued at £15,539, compared with £9,506 in July, 1949.

Other import values included in the *Trade Statistics* issued by the Central Statistics Office in Dublin, are:

Article	July, 1950	July, 1949
Writing paper in large sheets	£3,841	£4,926
Tissue paper	£3,879	£1,891
Packing and wrapping paper	£1,252	£1,511
Oiled, waxed and other waterproof paper	£14,617	£1,183
Printed wall and ceiling paper	£4,375	£3,926
Empty containers and parts (of cardboard, etc.)	£17,940	£14,034
Strawboard, not worked or corrugated	£11,689	£5,487
Other cardboard, etc., in the piece	£67,986	£46,339

Re-exports of paper and cardboard, etc., in July, 1950 were valued at £470, as against £140 in July, 1949.

ORDERS CANADIAN PULPWOOD

OTTAWA—It is understood here that Poland's cancellation of a pulpwood contract with Britain has been responsible for a British order for 60,000 cords of pulpwood worth $1,500,000 being placed in Newfoundland and that this may be the forerunner of arising from difficulties in such trade with "Iron Curtain" countries.

This is the reaction here to the report in London that the Bowater Paper Corporation, the British newsprint company, has indicated Poland's decision to suspend shipments of timber to Britain in apparent reprisal for Britain's decision not to send certain types of tools and machinery to "Iron Curtain" countries. The Bowater company has important holdings in Newfoundland and this action is believed based on an effort by the company to ensure that such essential supplies are available for its British manufacture of newsprint.

HAMMERMILL SERVICE AWARDS

ERIE, Pa.—Annual honor roll dinner and service award ceremony honoring members of the Hammermill Paper Co., Erie, Pa., service honor roll will be held October 15, in Rainbow Gardens, Waldameer Park, Pa. Attending will be approximately 600 members of the active service roll and nearly 100 retired employes.

Following the dinner, 119 men and women observing 20, 25, 30, 35 and 40 years service with the company will be feted. Eighteen men and one woman will be awarded honor diplomas and gold watches or shares of Hammermill preferred stock. President Norman W. Wilson will preside and Donald S. Leslie, first vice-president, will address the group. Games, prizes and refreshments will round out the afternoon's program.

CANADIAN CAR LOADINGS

OTTAWA—Canadian Government reports cars of revenue freight loaded on the railways dropped to 4,411 cars of woodpulp and paper in week ended September 23 compared with 4,472 in preceding week and 3,852 a year ago in similar week.

The Eastern Division accounted for 3,882 cars in week ended September 23 compared with 3,909 in previous week and 3,390 a year ago, with the Western Division dropping to 529 as against 563 in preceding week and 462 last year.

Such carloadings from the beginning of 1950 until week ending September 23 advanced to a cumulative total of 163,121 cars of woodpulp and paper compared with 147,757 a year ago in similar period, with the Eastern Division rising sharply to 142,178 as against 129,055 last year and the Western Division increasing to 20,943 compared with 18,702 a year ago.

NEWSPRINT FOR EGYPT

OTTAWA — It is understood that a trade agreement may be made between Egypt and Canada shortly, increasing shipments of newsprint to Egypt as a direct result of the pact.

SPRUCE BUDWORM BATTLE

OTTAWA—The Dominion Laboratory of Insect Pathology, estimated to cost approximately $1 million and considered one of the most modern in the world, has recently been completed at Sault Ste. Marie, Ont., providing headquarters for the fight against the spruce budworm which has caused untold damage to Canadian forests. It is hoped that scientists there will be able to develop a virus to kill the forest pests.

Among its equipment is an electronic microscope which magnifies 22,000 times.

ARGUE FREE TIME REDUCTION

NEW YORK — The Wood Pulp Importers appeared on October 4 at a hearing of the Freight Traffic Committee of the Trunk Line Railroads called to consider the reduction of free time allowances from fifteen to five days at the ports of Philadelphia, Baltimore and Hampton Roads. The railroad representatives heard H. J. Lanney, chairman of the traffic committee of the Assn. of American Woodpulp Importers, declare that such a reduction would result in more pulp being handled through the ports of Newark, Albany and Portland, Maine, where the fifteen-day free time rule prevails.

The importers present at the hearing also said that they would be inclined to move more imported wood pulp through Canada and the Michigan Great Lakes ports of South Haven and Muskegon where they would not only enjoy the fifteen-day free time privilege, but also lower inland railroad rates and storage charges. One speaker said abolition of the present free-time allowance would be an impetus to the development of the St. Lawrence Seaway. Several paper manufacturers said that they would be forced to reduce the proportion of imported wood pulp they now consume and rely more greatly on domestic sources of supply.

Wm. R. Settgas, traffic executive of the American Paper and Pulp Assn., presented the case for the consuming mills as outlined by Mr. Lanney.

The railroads took no action and unless they advise of a contrary decision, it is assumed the 15-day free period will be retained. The usual notice of a change would be a 30-day period.

GRANT WAGE INCREASE

SCRANTON, Pa.—Announcement was made of the signing of a one-year contract granting about 165 unionized employes of the National Paper Co., Ransom, a 10 percent general wage increase and other benefits.

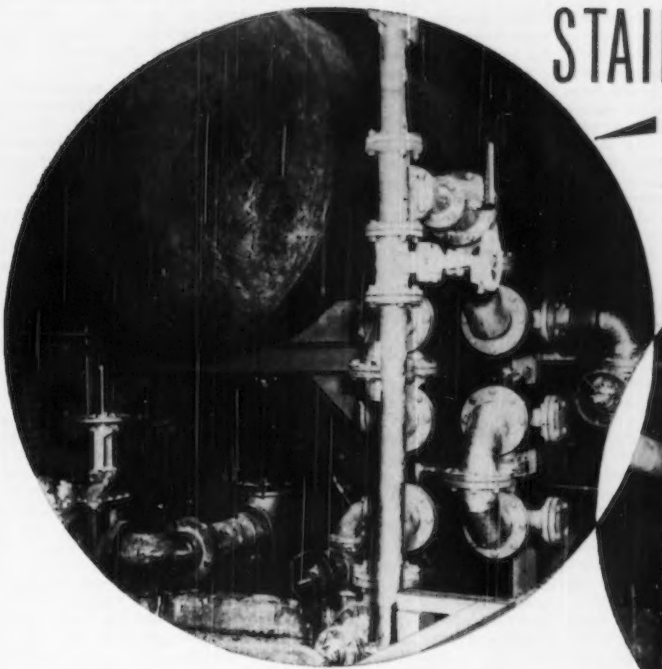
Mrs. Eleanor Lynott, Pittston, recording secretary of Local 448, International Brotherhood of Paper Makers, AFL, said the agreement was reached after a two-day strike following expiration of the old pact Sept. 16.

Differentials of 5 cents an hour for second shift workers and 10 cents for third shift employes, improved hospitalization benefits and double rates for Sunday work were other major union gains, she said. In addition, certain job rates were adjusted upward.

AWARD FOR CENTRAL STATES

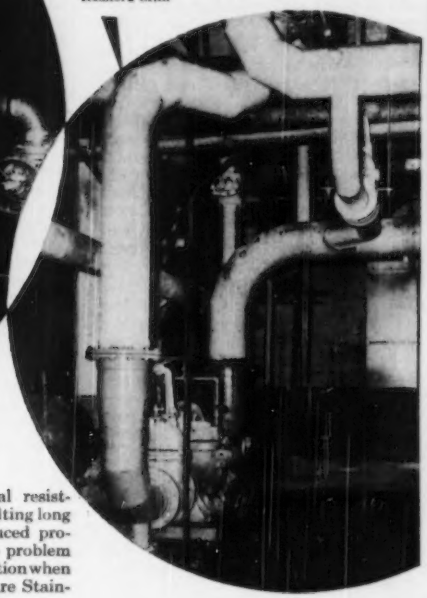
ST. LOUIS, Mo.—Central States Paper & Bag Co. has received a safety award from the St. Louis Safety Council for a record of 456,736 manhours in its St. Louis plant without a single lost-time accident. The award covers the period between January 1 and July 31 of this year.

PIPE and TUBING that carry corrosive liquids last far longer when they are U·S·S STAINLESS STEEL



Stainless Steel's resistance to acid corrosion makes it the ideal material for this hot liquor storage tank and delivery lines. The installation is at the Rumford Mill of the Oxford Paper Company, Rumford, Me.

Stainless Steel Piping—durable and free from contamination—is used at the fan pump of a high speed paper machine at Oxford Paper Company's Rumford Mill.



THE broad application of Stainless Steel often has been called one of the most important developments in the field of pulp and paper mill materials. And nowhere have the benefits of Stainless been more important than in heat exchangers, evaporators, white water and liquor lines, and other applications of Stainless Pipe and Tubing.

A large Western mill, for example, found that less durable materials in the first effect of their evaporators lasted only three to six months. But tubing of U·S·S 18-8 Stainless Steel was still in service, apparently untouched by corrosion, eight years after installation.

Stainless Steel's exceptional resistance to acid corrosion and resulting long life shows up quickly in reduced production costs. And there's no problem of contamination and discoloration when stock and white water lines are Stainless Steel.

Stainless Steel in the form of strip, sheets, plates, bars and wire plays equally important roles in hundreds of paper mill applications. Wherever used, the ability of this aristocrat of metals to reduce corrosion losses, to resist wear and abrasion, to withstand extremes of temperature pays off in a better product and reduced maintenance costs.

And for *best* performance from Stainless equipment, be sure that you use U·S·S Stainless Steel. In U·S·S Stainless, every form is available in a wide range of sizes, analyses and finishes—each a perfected, service-tested material, specifically designed for the job assigned.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL

Ask Pulp Be Exempt From Rating Provisions

WASHINGTON, D.C. — The National Production Authority has taken under advisement a recommendation by the Pulp, Paper and Board Industry Council that the NPA exempt pulp from the rating provisions of the priorities regulation.

Meeting with H. B. McCoy, assistant administrator for industry operations, and with NPA Administrator William H. Harrison, the recently-issued priorities regulations were discussed, as well as paper requirements of the government.

According to the industry representatives, present Government and civilian demands for paper, board and related products can be met without undue difficulty provided sufficient pulp supplies continue to be available through normal channels. The recommendation for exemption of pulp from the rating provisions of the order is necessitated, it was pointed out, by the fact that only about 6 percent of total U.S. pulp consumption (paper grades) is domestically-produced market pulp.

If rated orders were applied to this small percentage of pulp, said the members, a situation would shortly develop requiring specific allocations to all users. Furthermore, it was recalled, about 12 percent of all pulp consumed here comes from Canada or other foreign sources. Of the remaining 88 percent, produced domestically, about 83 percent is produced by paper and board manufacturers for their own use.

The meeting heard presented an estimate of Government requirements for newsprint to June 30, 1951, or through the current fiscal year. It was pointed out that these requirements relatively represented a very small proportion of the newsprint supply, almost entirely for use of the Government Printing Office, amounting to ½ of 1 percent of U.S. production alone.

As reported after the meeting, the government position is that its share should be assumed by U.S. mills, and be made up from present supplies. If these, on the other hand, are put under such pressure by other demands as to force government action to obtain its share, such action would be a recourse, but only as an extreme measure, and one that is regarded as essentially not called for, according to this report.

The situation will become somewhat clearer after bids are opened October 9, it was thought, referring to a set of supplementary bids recently called for by the GPO, covering both certain additional requirements, and supplies on which it failed to receive bids in the regular quarterly openings.

The meeting considered various possible steps looking to equitable distribution among manufacturers of rated orders for paper and board, under the new priorities regulation, it was reported later. Conservation steps also were considered, with respect to production of some paper and board items.

At the same time the meeting was told that U.S. productive capacity for these commodities is now considerably ahead of the pre-World War II period, and in fact some productive capacity is not being utilized at present, particularly in paper board used for containers.

The Council agreed to provide the NPA with personnel from each important segment of the industry to advise and assist in operating the priorities regulation, as to develop any other measures necessary in expanding mobilization. Four members of the Council will serve on NPA's overall Forest Products Industry Advisory Committee, which is to be named shortly, and the same four will constitute a "watch dog" committee on availability of pulp supplies.

Besides the Administrator and Mr. McCoy, other government representatives were Harold E. Holman, acting chief of Forest Products Division, and W. LeRoy Neubrech, chief of the Pulp, Paper and Board Section of NPA, while members of the industry present included:

Sidney Frohman, Hinde and Dauche Paper Co., Sandusky, Ohio; Sidney M. Phelan, Jr., West Virginia Pulp and Paper Co., New York, N.Y.; D. K. Brown, Neenah Paper Co., Neenah, Wis.; M. C. McDonald, Chesapeake Corp. of Virginia, West Point, Va.; H. R. Weaver, International Paper Co., New York, N.Y.; L. K. Larson, Weyerhaeuser Timber Co., New York; Amor Hollingsworth, Penobscot Chemical Fiber Co., Boston, Mass.; R. A. McDonald, Crown-Zellerbach Corp., San Francisco, Cal.; A. K. Nicholson, Hollingsworth & Vose Co., Boston, Mass.; Willard J. Dixon, St. Regis Paper Co., New York, N.Y.; Peter S. Paine, New York and Pennsylvania Co., New York, N.Y.; John L. Riegel, Riegel Paper Corp., New York, N.Y.; W. Irving Osborne, Jr., Cornell Wood Products Co., Chicago, Ill.; R. W. Hovey, Oxford Paper Co., Boston, Mass.; Leo E. Croy, Marathon Corp., Neenah, Wis.; W. B. Zimmerman, Howard Paper Mills, Inc., Franklin, Ohio; H. H. Hanson, W. C. Hamilton & Sons, Philadelphia, Pa.; George Olmsted, Jr., S. D. Warren Co., Boston, Mass.; George E. Dyke, Robert Gair Co., Inc., New York.

FIBRE BOARD WAGE RISE

RICHMOND, Va. — A 13-cents-per-hour "package" wage increase has been granted about 115 union employees of the Fibre Board Container Corp. plant here, it was announced by a union official.

It includes an 8-cent, across-the-board hourly pay raise and about 4 cents an hour worth of insurance and hospitalization benefits, to be paid for by the company, according to Robert Turner, international representative here of the United Paperworkers of America, CIO.

At the same time, he announced a 5-cents-an-hour wage increase in a new contract with Wortendyke Manufacturing Co. Over 300 paperworkers, members of Local 692, will be affected by that raise, Mr. Turner said.

KNOWLTON WAGE INCREASE

WATERTOWN, N. Y.—The base wage rate for employes of the Knowlton Brothers, Inc., has been raised an average of four per cent to compensate for the increased cost of living.

The boost in the base wage rate will represent increases ranging from four to six and one-half cents an hour in the various categories.

Announcement of the pay increases was made by David C. Knowlton, president of Knowlton Brothers, Inc., and Harold E. Alton, president of Circle Kay Local No. 463, International Brotherhood of Paper Makers.

MOVE N. Y. OFFICE

TOLEDO, Ohio—The American Coating Mills Division of Owens-Illinois Glass Co. has moved its New York branch sales office to 100 Park Avenue. The move was made October 1st. American Coating Mills manufactures clay-coated boxboard and folding cartons. Salesmen in the New York area are W. E. Terry, branch manager, and F. J. Leahy, D. R. Earl and R. W. Lidquist.

TEREN HEADS OREGON PULP

SALEM, Ore.—Resignation of Robert H. Noyes as president of the Oregon Pulp & Paper Co. and appointment of Nils G. Teren as his successor was announced September 26.

Mr. Noyes resigned to devote more time to personal business affairs. Mr. Teren served as mechanical head of the Columbia River Paper Mills and Oregon Pulp & Paper Co. for many years.

CHISHOLM NAMED VICE-PRES.

NEW YORK — William H. Chisholm, formerly assistant to the president of the Oxford Paper Co., 230 Park Avenue, New York, has been elected vice-president of the company. Mr. Chisholm, who has been associated with the firm since 1940 was recently also elected a director.

Use of Sulphite Waste Liquor As Road Binder *

W. A. SHERMAN[1]

The use of sulphite waste liquor as a road binder stops dust and stream pollution at the same time. Sulphite waste liquor is the most economical dust palliative within a reasonable hauling distance from the sulphite mills. The hauling of the unconcentrated sulphite waste liquor as a road binder is the most effective means of reducing stream pollution available at present. All other methods of reducing stream pollution by any process known return a percentage of pollution to the stream, but in hauling unconcentrated sulphite waste liquor there is absolutely no return to the stream of any portion of the waste liquor processed.

Sulphite waste liquor not only lays the dust, but also makes an amazing improvement in the road condition. When it is properly applied by the most economical public hauling equipment, it actually pays for itself up to 20 miles or more from the source of supply. It prevents dust, washboard, loose gravel and mud troubles. It makes a hard, dense, smooth surface, somewhat like pavement in dry weather which can be smoothed and resurfaced again every time that the weather is wet enough to soften the surface.

The sulphite pulp production in the United States is close to 3,000,000 tons a year and the sulphite production of the State of Wisconsin is over 400,000 tons per year. In the sulphite process, half of the wood goes down the stream as sulphite waste liquor. We, in the sulphite industry, have been roundly condemned by all of the conservationist groups for many years because of this economic waste and the stream pollution which results from it. Any use or disposal program to be effective must first have a large enough potential market to make possible a noticeable improvement in stream condition. It must be technically correct and economically sound. Many processes have been suggested for the elimination of stream pollution from sulphite waste liquor, but few, if any, have ever met all of these exacting conditions for a long enough time to come into general use.

Our Sulphite Pulp Manufacturers' Research League of Wisconsin and Michigan has made a study of all of the processes for reducing stream pollution from sulphite waste liquor. All of the other possibilities have been eliminated from the field except fermentation, evaporation and use as road binder. The Wisconsin Committee on Water Pollution, in sending out their orders to the Kansas City Star Company, Flambeau Paper Division, recognized these three processes as being suitable for the reduction of stream pollution. Mr. T. F. Wisniewski, the director of this committee, has been actively promoting the idea of the use of sulphite waste liquor as a road binder with the state highway department, not only in Wisconsin, but also in Michigan. Some of you may have seen the "On Wisconsin" column in the Milwaukee Journal of Wednesday of last week which mirrored some of the sparks from this battle with editorial comment favorable to the use of sulphite waste liquor as a road binder.

Flambeau started experimenting with sulphite waste liquor as a road binder back in 1944. In the seven seasons which it has been used, a great deal has been learned about the most effective and most economical methods of handling this material. First, let me assure you that sulphite waste liquor really works as a road binder. I would like to have you observe the dusty condition of this sample of soil which I am sprinkling in front of you. Loose dust, treated with sulphite waste liquor and allowed to dry, becomes a hard block which I can carry around and show off to many potential users of sulphite waste liquor. The roads that are treated with this material are fully as hard and smooth and resistant to wear and tear as this block, not only in dry weather, but also in wet, and also during the spring break-up.

People do not fall for a line like this, except when they have been annoyed by the dust nuisance with both direct and indirect expenses for such a long time that they are very anxious to get rid of it. The residents and users of these dusty rough roads want a smooth, hard pavement-like surface but they cannot afford it. They are fully aware of the expenses involved in maintaining this dust nuisance, both in the maintenance of the roads themselves and also the expenses of driving upon the dusty, rough roads.

Sulphite waste liquor used as a road binder actually pays for itself within a radius of 20 miles from the mill, by reducing the grading and filling costs. The trucking charges mount as the distance from the mill increases until eventually an economic limit will be reached. At the present time there

A Dusty Untreated Road

[1] Sulphite Superintendent, Flambeau Paper Division, Kansas City Star Co., Park Falls, Wis.

* Paper presented at the 1950 Fall Meeting of the Northwestern Division of The American Pulp and Paper Mill Superintendents' Assn., held on September 15-16 at Hotel Schroeder, Milwaukee, Wis.

Road being Sprayed with Binder.

seems to be no economic limit established for road binder hauling. It appears that it will compete with calcium chloride up to about a 150 mile haul from the paper mills here in Wisconsin where the chloride is relatively expensive. There probably is not a sulphite mill in the state or in this whole midwest region that does not have enough dusty, dirt roads within 150 miles to absorb the whole sulphite waste liquor production for all of the dry weather and the summer months when the road binder can be applied.

One of the first questions that is asked when talking about any new road surfacing material is, "Is the supply sufficiently large so that the material can have general distribution without the danger of running out?" In the case of sulphite waste liquor, we all know that there is more than a ton of solids going down the stream for every ton of sulphite produced. We also know that this material can be collected as a solution from the blow pits at about 10% solids, or in that neighborhood, and that there are over 2,000 gallons available for every ton of sulphite produced. A 100 ton sulphite mill will produce over 5,000,000 gallons of road binder per month. There are over 50,000 miles of unsurfaced roads and streets in Wisconsin which would absorb more than twice the sulphite waste liquor produced during the hauling season.

Stabilizer

Road binder is not only beneficial as a dust palliative, but also is a very good soil stabilizer in both dry and wet weather as well as during the spring break-up. The application of binder to a dusty road of proper composition stabilizes the surface and prevents dust. Binder packs and hardens the road surface, changing its appearance entirely. The road can be shaped by grading while still moist to produce a smooth, hard driving surface which is darker in color than an untreated road.

Binder treated roads do not have the washboard ridges that are common in dirt and gravel roads. The surface can be maintained in smooth condition by grading when necessary during or after rain. Rain softens the binder treated road enough so that it can easily be reshaped by grading. The binder, which is still water soluble, leaches only slightly. The grader blade makes a smoother cut on treated roads giving a smooth, driving surface.

Binder prevents deep or excessive penetration of water because of its tendency to seal the soil surface. Over a long period of time, binder treated roads continue to pack in depth because of the slightly plastic condition the binder creates. The packing in depth tends to fill the voids deep within the road bed. This packing is noticeable in the development of hollows in the road surface which must be filled as they develop by grading the road when wet. As the road packs and becomes more dense, there is less space for water. Reducing the moisture capacity of the road bed reduces spring break-up trouble and rut trouble in rainy weather.

Binder Stops Dust and Saves Money

In treating dirt and gravel roads with road binder, it has been found that binding the dust and the gravel together in the road surface has prevented the wear on the roads. The dust laying and stabilizing action of binder holds the dust and gravel on the road surface instead of letting it throw off into the ditches and blow for hundreds of yards across fields and forest. It keeps the road materials out of the bushes. Worn out dirt and gravel roads must be regraded and have new material added to them frequently to keep them in condition for driving. There is considerable expense involved in grading operations and a lot more expense in adding fresh material to the road surface to take the place of that which has been lost through traffic. In some areas there is plenty of fine material in the ditches and possibly some of the gravel can be recovered, which has been thrown off to the edges of the road. In many places, however, there is no way of recovering the material from the roadside, but it has to be replaced by hauling.

Binder eliminates this direct expense by stopping dust, loose gravel, and soft mud. Its value may be even greater in stopping the hidden costs, such as loss of tourist business, loss of actual and scenic values, health hazard, car damage by abrasion and the serious accident hazards of untreated roads.

Most people have to live in a cloud of suffocating dust and drive on rough, loose gravel and washboard roads and put up with loss of roadside business, excessive car wear and damage, or even accidents, for a long time before they can realize the advantages which may be attained by road improvement. When they have gone through this torture for a long enough time they really appreciate an improvement such as can be made with the use of sulphite waste liquor as a road binder. All of these items add up to a lot of expense which does not show up in taxes, but it is very real nevertheless. In many cases they have shown a willingness to spend considerable amounts of money to come up out of the dust and live on a semi-paved road.

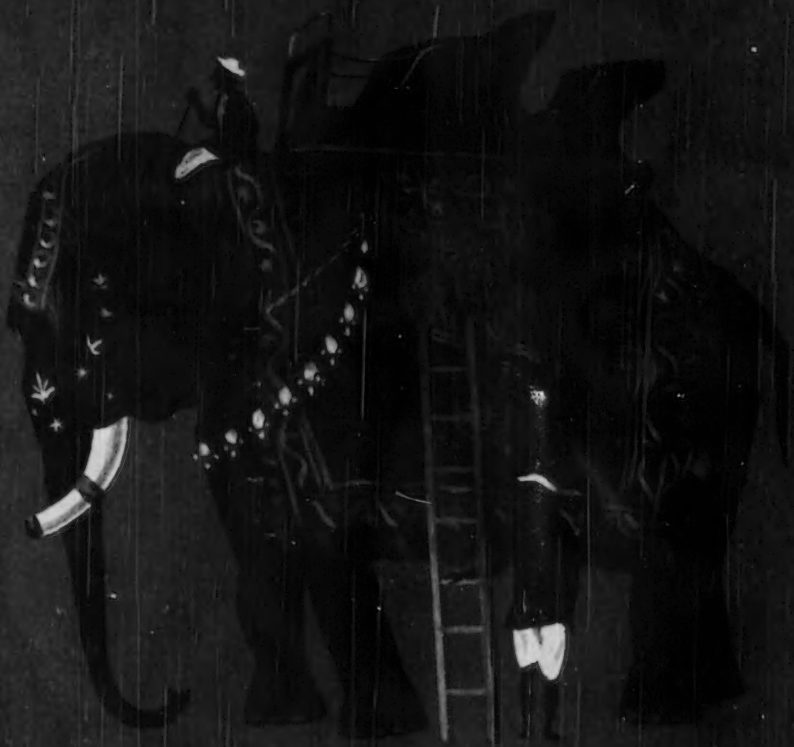
Roadside business men have told me that "I dust this counter twenty times a day and can't keep it clean." Farmers say, "Use road binder in front of my place because the dust is so hard on the cows' teeth." Resorts and tourist places not only use the material on their roads and parking lots to make driving better, but also to keep their lodgings and places of business cleaner and more sanitary. Dust is a serious menace to health. The Wisconsin legislature recognized the health hazard of dust by making dust prevention around creameries a mandatory practice. The committee on water pollution recommends sulphite waste liquor as a dust palliative around creameries. Not only creameries but all places of business which handle food should be dust protected.

Dusty dirt roads make rattle traps out of good cars in about half the time and distance as would happen on a pavement or on a road binder treated road.

You can see from a brief mention of the various forms of the dust nuisance that these hidden expenses are very real and should be added to the cost of maintaining an unsurfaced road.

Binder Prevents Water Damage

As the research and development continued on the use of road binder, not only the economy of dust preven-



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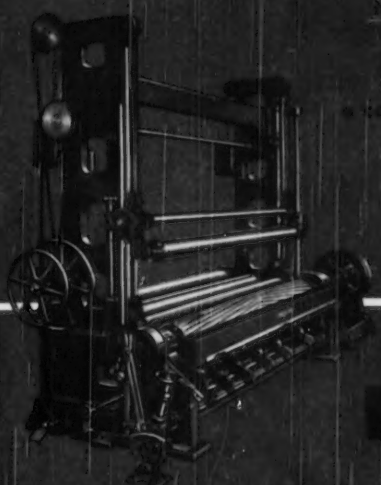

SLITTERS

Langston

ROLL WINDERS

tion was proven on all the dirt and gravel roads within a relatively long hauling distance from the mill, but there were many other benefits derived from the use of road binder. It prevents the softening of the road surface with rain at as rapid a rate as is normal in dirt and gravel roads because of two different effects of this material. It keeps the road surface sealed as well as in a plastic condition so that for a considerable depth the soil continues to pack with traffic until it gets extremely dense.

The pressure of traffic rolling over the road moistened with road binder is necessary to get the benefit of the maximum packing. As the binder dries it cements the road surface into a hard, rock-like substance which will soften again the next time that it is moistened with rain just enough so that the road can be graded when necessary. The extremely hard dense road does not lend itself to a rapid penetration with water. This same action also reduces the formation of reservoirs of water in the road bed which cause what we know as frost boils during the spring break-up. If the accumulation of the water can be prevented, then there is no frost damage.

Stabilization Before Blacktop

Because of the improved density and stability of binder roads, they make a much better bed for blacktop and similar materials.

Blacktop or bituminous surfaced roads almost never fail, except where the road bed breaks down in some way, causing a rough, bumpy condition. This failure is often due to the soft condition of the dust and gravel used for a base. More often the failure is due to the frost damage during the spring break-up causing a soft, muddy condition which allows the blacktop mat to ripple and break.

Road binder makes a very hard and durable foundation layer for blacktop work, especially if applied for a year or more before the blacktop is laid. By reducing the maintenance expense of the blacktop mat, binder will pay for itself many times over besides keeping the black top mat in a good driveable condition much longer than would otherwise be possible.

Dust Pockets and New Fill

In sandy areas, roads frequently break up in depth during dry weather. Some have called this condition in the road dust pockets or quick-sand because traffic gets stuck and can't get through. Road binder is producing excellent results by stabilizing dust pockets. In one road where pulpwood trucks were stuck every trip, the application of 9,000 gallons of binder per mile was sufficient to put the road back into excellent driving condition.

The stabilization of these dust pockets with binder is the more surprising when the rest of the story of these dust pockets is known. Before using binder the truckers had tried to bulldoze out the loose sand and found that the longer they worked the worse the condition. Then they tried gravel which also failed to harden the road. It was only after repeated failure that they tried binder and found it so beneficial.

When adding fill to a road in dry weather, a loose dusty condition sometimes develops. This condition allows the best part of the new fill to be lost through dust blowing and gravel throwing of traffic, while at the same time the driving condition of the road is bad. Loose new fill, if it has the right composition, is stabilized very readily with road binder. If the conditions are properly controlled as to composition of soil and quantity of binder, the result of the treatment of loose new fill, amazingly enough, appears like blacktop.

For the benefit of those who are not too familiar with the subject of sulphite waste liquor, we will digress for a moment. Sulphite waste liquor, collected at a 10 percent solids content, contains about 6 percent lignin, 3 percent sugar, and 1 percent residual chemical. The results of road binder work show that all of these materials are active in stabilizing the road surface. The binder solution and the material after it dries, either on smooth surface or mixed with the road material, looks and acts a great deal like glue. It is non-poisonous, non-injurious, and non-corrosive in road treatment. There is some corrosive effect from a binder before it is spread on a road surface; but immediately upon being spread, the gases, which pass off, change the nature of the material entirely as far as the corrosion is concerned. The gases which pass off as the binder is spread have a penetrating odor which lasts only a few minutes before it is dissipated.

The lacquer-like coating, is formed by the drying of the binder splashed against any surface, gives some protection from corrosion. The spreading equipment which has been sprayed with the boiling hot binder hundreds of times has been protected from rusting by the binder coating. A small sheet metal house, located right by the side of the loading platform, gets sprayed on one side quite frequently. On this side the paint is in good condition; but on the other side, where no binder has sprayed the paint, it is peeling rather badly. There is some evidence that spraying rubber tires with binder solution helps to preserve them.

Some of the steel culverts which had been crushed in by grader work were thought to be in a rusty condition because they had been in the road bed for a long time. When these culverts were dug out of the road bed which had been treated with binder, the culverts were in bright and shiny condition and were good enough to be put back into the road.

The protective value of the binder is not sufficient to make it worth while to use it for this purpose alone, but it is a little added advantage to know that any material which is used on a road surface gives some protection rather than damage to equipment.

When the binder is applied boiling hot, it will kill vegetation or cause burns to the skin as any boiling solution will do. Binder, when cool, is not injurious to the skin, or to animal or plant life. In fact, binder has some value as a fertilizer.

Flambeau has made some studies of the fertilizer value of binder which indicate that it gives noticeable benefit when applied over sod and plowed under. The first year crop of oats and the second year crop of clover were somewhat better than the unfertilized surrounding area. The fertilizer value of the binder proved that it is harmless to vegetation.

There is evidence that binder treated roads may be insect repellent. Watermelon rinds, which were black with flies in a roadside pasture, attracted no flies when placed on a binder treated road. Binder surfaced roads seem to repel grasshoppers and mosquitoes. The insect repellent properties of binder seem to last for several days after all noticeable odor of binder is gone.

Preparation of Soil for Road Treatment

Before the binder can be used with best results the soil must be prepared in the proper manner as with any road treating material. With the use of road binder, it is necessary to have the proper mixture of gravel, sand and clay, hard pan, or other fine materials, making as hard and dense a road surface as possible with the untreated soil in order to do the most economical job with binder. The gravel makes the hard wearing surface; the sand fills the voids or spaces in the gravel, and the clay fills the voids in the sand and binds the whole mass together. The binder will not bind gravel together without sand or clay, but binder has given good results on sand or clay without gravel. More binder is required in pure sand than would be needed if some clay were present.

In determining how to make the most economical driving surface, it is sometimes necessary to decide whether it would be more advisable to haul clay or extra binder to produce the desired surface. The ideal condition would be a deep layer of gravel with all the voids in the gravel filled with sand, and all the voids in the sand filled with clay. When the binder is added to roads which have this sort of a composition, and either mixed or allowed to penetrate deeply, a hard, rather durable road surface is produced.

The quantity of road binder which is required to give a good, solid driving surface varies considerably from one local condition to another. With all conditions being favorable, as little as 10,000 gallons of binder per mile

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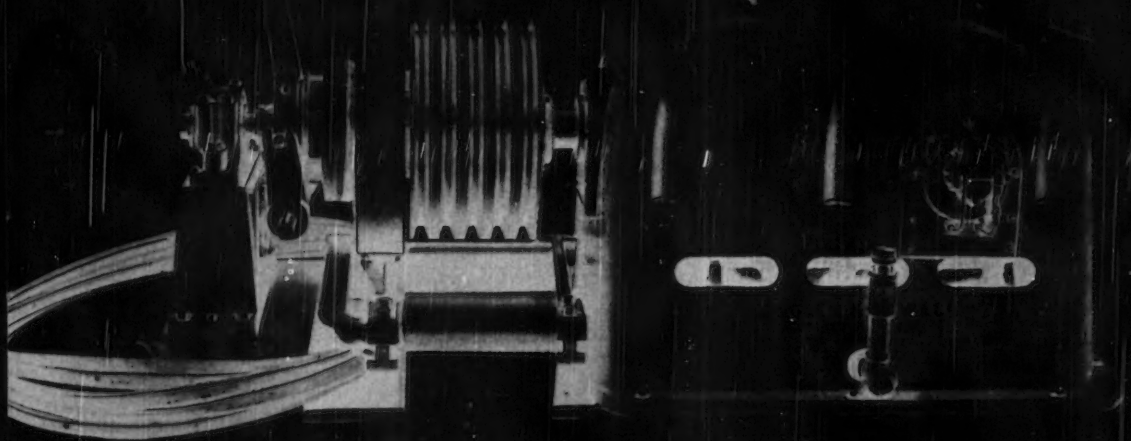

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per year may be sufficient. With less favorable conditions, much more binder may be necessary, up to even 40,000 gallons per mile per year. After the first year, the amount of binder required to keep the road in good condition is reduced.

It is often possible to collect enough fines in the ditches along the roads to make a very good mixture with gravel which has been hauled in and added to the road surface. If this is not possible, it is sometimes necessary to haul clay or fine materials for considerable distance.

Application of Binder

The most economical application of binder is made with relatively large capacity semi-trailer tanks. The trailer tanks are equipped with pipes and shower so that they both haul and spread the binder. The binder rushes out of one inch (1") pipe coupling nozzles and across a splash board, where it is broken up into a soft spray and falls like rain on the surface of the road. It immediately soaks in, in much the same way that the same way that the same amount of rain water would do.

By controlling the speed of truck travel the amount of binder can be varied over a rather wide range. The usual application is as heavy as can be spread on the road surface without running off. Thinner applications have no advantage and heavier treatments which allow the binder to run into the ditches are wasteful. When binder is applied to a road in a 10 percent solids application, it is necessary to apply several coats before sufficient binder has been added to the road surface.

Binder is applied during dry weather or at any time when the road is dry enough to soak up the moisture. Some moisture in the road bed is beneficial. Too thick a layer of dry, dusty soil will resist the penetration of binder. If the binder does not moisten all the loose, dry material the surface may not stand up. Loose material under the binder surface allows the crust to break and destroy the benefits of the binder.

It appears to be necessary that the binder should have sufficient time to set and dry before rain, to prevent rapid leaching of the binder in the surface of the road. If a rain storm comes up immediately after the application is made, the binder which is still in a moist condition on the road surface is flushed off. During the period when the binder is being added to the road surface, whatever grading or shaping seems to be necessary should be done. After the last grading, one last sprinkle of the binder should be added to stabilize any loose surface material.

Approximately one-half of the binder which is needed for the whole season should be added to the road as early in the spring or summer as is convenient and practical. The rest should be distributed in light treatments to maintain a sealing coat on the road surface during the rest of the season. There is a small amount of leaching with rain and melting snow, which is kept at a minimum by proper soil preparation in using clay or other fine material in the road surface.

Road Free from Dust After Binder Treatment

Grading after the road is once set and hard should be done only when necessary and then only when the road is in a moist condition. If, for any reason, it becomes necessary to grade a road that is dry and hard, moisture must be added by sprinkling, if the grading cannot wait until a rain.

The binder itself has been used frequently for softening road surfaces which needed grading. If the binder treated road is in a sufficiently wet condition when graded and has the proper composition, it will set up again and have much the same appearance as originally without the addition of more binder. The frequency of adding subsequent sprinkles of binder after the road has had its original treatment seems to depend to a large extent on local conditions.

At Flambeau, we have used a fleet of three 3,000 gallon semi-trailer tanks for the distribution of binder. This size of tank seems to be somewhere near the optimum for the various sorts of work that we have been doing. We have noticed, however, that a smaller tank size would be quite convenient in handling streets and parking lots within the city; whereas, the largest type of hauling equipment which would be practical would be most economical for the longer hauls.

It requires about ten minutes to fill a trailer tank of 3,000 gallon capacity, and about the same time for sprinkling it on the road surface. In our operation the rest of the time is driving and travel time going back and forth between the source of supply and the many users.

One man handles the whole operation of each trailer truck. He is the driver and controls the spreading of the binder at the same time.

On the larger jobs, it is becoming apparent that contract haulers cannot compete successfully with public hauling equipment belonging to the various units of government because of the enormous amount of tax paid on truck transportation. On the larger jobs, too, it is important that there should be enough supervision which is only possible by having the equipment directly under the command of a man who is in charge of making and maintaining the roads.

All private operators must make a profit, in order to stay in business. Between the taxes, profit and supervision, there is considerable saving to the taxpayers by the use of public hauling equipment. For these reasons some of the larger users of road binder are equipping themselves with tractors to pull Flambeau trailers and even considering the purchase of trailer tank equipment.

Development of Program

Road binder is both beneficial and very economical to use, but it requires a high pressure promotion job to get people started using it. I have found that one of the worst things to combat in spreading of sulphite waste liquor as a road binder is the fact that many people think it is very corrosive to automotive equipment. People in general have a thousand and one reasons for not trying the new material and for trying to use the wrong methods of treatment and soil preparation. All of these things have to be broken down over a period of time by tactful but forceful explanation of the right procedures and methods.

When Flambeau first started to haul road binder, the program was greeted in many areas with a great deal of suspicion. This suspicion gradually

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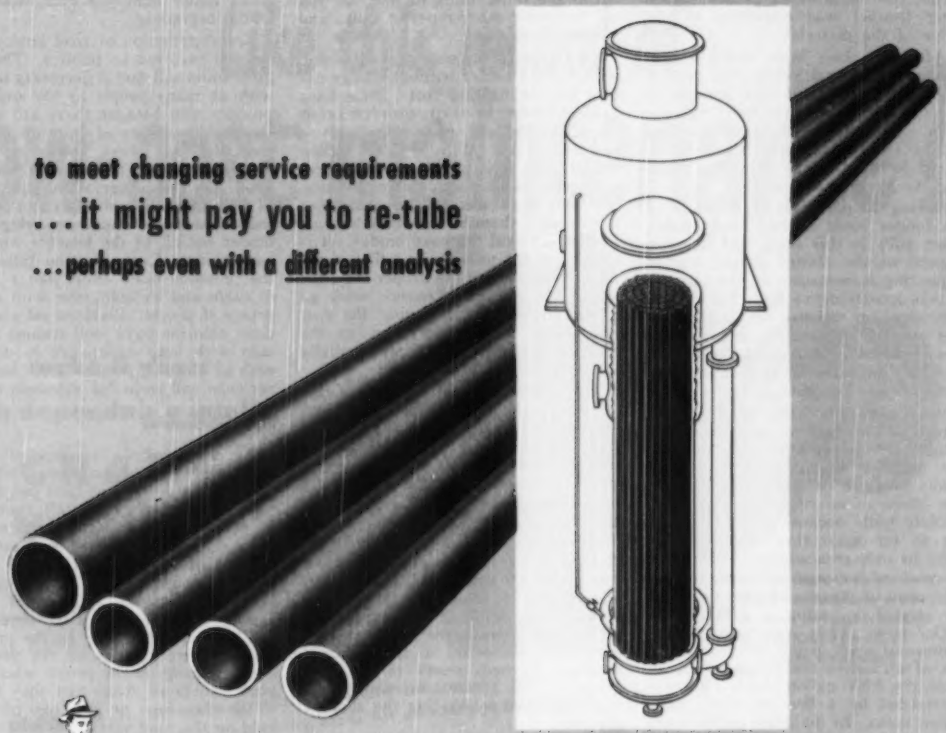

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turned into enthusiasm, as one person after another was convinced of the value of the material.

After we had been hauling road binder for several years, this process of road improvement was brought to the attention of several other sulphite mills. At first they found it hard to believe that the sulphite waste liquor would do the good job in binding roads that we have developed.

During the period of development of the longer hauls of our road binder, other mills in this state, and in other regions of the United States, started requesting information on the process. It was gratifying to find that the information on the use of road binder was apparently traveling to great distance through grapevine telegraph. We had inquiries from several other states on our program.

It has always been our policy to give out all of the information that would help the states and other sulphite mills get together on a substantial road binder program of their own. We feel that there is no competition between sulphite mills because ordinarily they are so far apart that each one will serve its own area without any conflict to speak of between mills. In the development of this road binder program, we started by using a 2,000 gallon trailer tank. After four years of experimental work, using different methods of treatment and types of equipment, the 2,000 gallon trailer tank was superseded by a fleet of three 3,000 gallon tanks. In the 3,000 gallon tanks we are using stainless steel, four inch (4") lead-off pipe and valve, and three inch (3") shower pipe, equipped with one inch (1") pipe couplings as nozzles, spraying across the splash board.

This development improved the operation considerably over the use of ordinary shower nozzles which may plug up with any sulphite fibres that may accidently get through the bottom of the blow pits. The pipe couplings have the further advantage that part or all can be plugged with one inch pipe plugs to spray a narrow strip like in shoulder binding or for treating areas with a hose where the truck cannot travel.

We have used wooden tanks with stainless steel funnel, distributing pipes and valve, and all the rest of the metal, ordinary carbon steel. There is a possibility that used milk and gasoline trailer tanks will be satisfactory at a much lower cost. The milk tanks are stainless steel or glass lined and the gasoline tanks are carbon steel.

We have found that the corrosive effect of binder before spreading is not serious unless it is flowing. Binder erodes carbon steel very badly. We used an old carbon steel boiler as a tank for several trips. The binder took the rust off the boiler but there was no apparent sign of corrosion of the steel. Because we do not know what materials will be most economical, we encourage other mills to help us find out by trying other types of tanks and pooling the facts.

To encourage its widest possible use, we offer the binder without charge except for the hauling cost. Some have hauled binder in their own tanks or even barrels and spread it with a sprinkling can. With a 3,000 gallon trailer tank, it is possible to haul economically up to considerable distance. We have been amazed at the distance that people thought it would be economical to haul the road binder. It is evident at the present time that if the material is used in the proper way, the savings in road maintenance work go a long way towards paying the cost of hauling road binder, and on the short hauls from the mill will actually pay the full cost of hauling.

The economies and benefits of the use of road binder have apparently impressed the governments of several cities up to 60 to 70 miles from the mill at Park Falls, as well as several counties, towns and villages.

The longest haul that we have ever made on 10 percent solids road binder has been 100 miles. With this dilute material we expect to limit our activities to the 100 mile haul for the immediate future at least. We have made a great many hauls in the range of 60 to 75 miles from the mill and, of course, have spread a much larger number of roads closer to the mill. However, the greatest economy is always achieved by hauling the shortest distance.

Road binder does not compete directly with other road surfacing materials. The cost of binder is such a small percentage of the cheapest other surface that binder can surface roads that could not afford even the cheapest surface before. Because of its low cost, binder is also used for grade stabilization to reduce the maintenance expense of the other surfaces.

Grading and graveling cost to maintain gravel roads may run $300 per mile per year and still leave the road in poor driving condition. The hauling cost, using public equipment, is so economical that binder will actually save money on some roads up to 100 miles from the mill while making a great improvement. At 100 miles from the mill and with favorable soil conditions, binder will cost less than $250 per mile per year. Calcium chloride is reported to cost over $600 per mile per year, including spreading to maintain the road in dust free condition. The thinnest blacktop mats cost $1,250 per mile to lay and $300 per mile per year to maintain with re-oiling and patching.

Binder does not compete with blacktop oil, but will be used where an improvement is desired and blacktop is too expensive. The favorable publicity which the sulphite mills are receiving for hauling binder indicates that the supplying of road binder is a much larger factor in the disposal of sulphite waste liquor than was ever hoped for in the beginning.

The distribution of road binder may become involved in politics. The sulphite mills will find it necessary to deal with as many people as the ordinary grocery man because there are an innumerable number of units of government such as cities, towns, villages, counties, the state highway department, and the conservation department as well as many businesses and private individuals who should be using road binder for all of the benefits which it can achieve. Every election kicks over the previous sales effort like a house of cards and we start over with a new group of people. Blacktop oil and calcium chloride have well trained salesmen with long experience in dealing with all sorts of people. Time and experience will train our salesmen too.

New Discoveries

As we studied the use of road binder, we have become convinced that the addition of clay or hard pan to the road surface was absolutely necessary to get the best and most economical results where there was an excessive amount of loose gravel on the road. Where the proper soil composition has been achieved the amount of road binder required to do a top-notch job has been rather small. At the present time, we are faced with the problem of convincing all the people who have gravel surfaced roads that they ought to put clay, fines or hard pan of some kind on the road surface to bind all of this loose material together in order to get the most economical results.

The present binder surfaced roads may be good and very economical but there is a lot of room for improvement. Research should be carried on by the sulphite mills in cooperation with the state highway departments on soil preparation, reduction of hauling cost and increasing the concentration of binder coming from the blow-pits and grade stabilization before other surfacings are laid. We do not know the best methods on any of these angles and a lot can be gained by proving the benefits of binder to the highway people.

We would like more information from anyone who has actually increased the waste liquor concentration to get the best efficiency in a recovery plant or even given it serious consideration.

Waterproofing Road Binder

There is a very recent discovery for making sulphite waste liquor insoluble in water. At the present time, the expense is much too great but it has led us to hope that sometime within the not too distant future, it will be possible to insolubilize road binder—meaning that a road surfaced with this material would be much more permanent than at present. We, of course, are following up this angle of treatment very closely.

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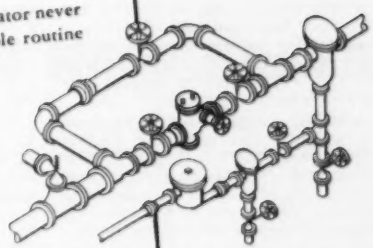

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Concentration of Binder

It is possible to evaporate sulphite waste liquor to a concentration of about 50 to 55 percent solids for shipment in order to cut the hauling cost. This evaporation would be rather expensive, however, but on long distance hauling it might pay to change to the evaporated waste liquor. The distance on which it would pay to start using concentrated waste liquor would depend on the relation between the hauling and evaporating expense. Not enough is known about this at the present time to tell what the economic distance for hauling dilute or concentrated waste liquor will be but we have some basis at present for future calculations.

The present delivery cost on a 100 mile haul is $16 per 1,000 gallons, using private hauling equipment. Five thousand gallons of unconcentrated binder is equivalent to 1,000 of 50 percent concentrate. The delivery cost of 5,000 gallons of unconcentrated binder 100 miles from the mill and the delivered cost of 1,000 gallons of concentrated happens to be exactly equal at present. Public hauling cost would probably be between $8.00 and $12.00 per 1,000 gallons on a 100 mile haul, but future developments in evaporation probably will reduce the costs of concentration. Economy will result from improvements in methods and increased volume of binder usage.

Binder cannot be applied successfully at over 25 percent solids because it is impossible to get proper mixing with the soil at higher concentrations. For this reason, evaporation of binder must be followed by re-dilution to about 25 percent solids for mixing into the road. It is quite evident, however, that the use of concentrated sulphite waste liquor as a road binder will come eventually for those areas which are presently outside the economical hauling range from the sulphite mills. Cheaper evaporation will probably reduce the cost of road binder over 50 miles from the sulphite mills. On shorter hauls the unconcentrated binder probably will always be cheaper.

Some road binder has been used in other areas. The State of New Jersey has been using concentrated sulphite waste liquor from Pennsylvania mills for something over 30 years under the trade name of "Lignin Binder." Some unconcentrated road binder has been used in the Pacific Northwest where there was serious dust trouble in the area adjacent to some of the sulphite mills.

The use of road binder in Sweden has reached a high degree of development. In Sweden they recommend such things as clay, hard pan, or what they call binding earth, to bind the gravel together in the surface of the road. In the Swedish road binder literature the necessity of using fine materials which act as a binder for the gravel has been emphasized time and time again. Over 60 percent of Swedish roads are treated with road binder and only 5 percent are surfaced in any other way.

Future of Road Binder

The future for road binder is bright with the hope of increasing its use near those mills now spreading it and increasing the number of mills in the program. There is no doubt that new discoveries and methods of handling will make binder roads both better and more economical.

Sag vs. Belt Length

F. H. RUMBLE[1]

Newly installed sets of V-belts that sag—some more noticeably than others—very often pose a question in the mind of the plant engineer. That question is, "Will pulling the sagging belts tight overstretch the others?"

Actually, a sagging belt is no cause for anxiety. Too often the relation between sag and belt length is misunderstood. This leads to an exaggerated idea of the difference in length between V-belts on a multiple belt drive.

To clarify this situation, it should be pointed out that measurements of V-belts are made on grooved sheaves in motion under normal operating tension. Each belt is stamped—following the name brand—with an inspection number. This number represents the plus or minus tolerance of the belt.

Let us, for example, say that 50 has been selected as the base number. Then, belts stamped with numbers below 50 are minus tolerances; those identified with numbers over 50 are plus tolerances. Each number represents a difference of 1/10th inch. The maximum length difference allowed between the shortest and longest belt in a matched set is only 1/10th of an inch per 100 inches, or 1/10th of one percent. Consequently, stretching the shortest belt of a set this small amount will not harm it.

In considering the length between the tangent points of the sheaves on a drive, the accompanying table gives the differential in length between a belt which is tight and one which sags on the same drive. Values listed are for 180° arc of contact on both sheaves and would vary slightly for other ratios.

Any reference by an operator to belts being "four or five inches longer than other belts on the drive" is usually exaggeration based on a misunderstanding of the relation between sag and belt length. Actually the amount of sag is very misleading as can be seen by the table. On a center distance of 100 inches a sag of two inches will appear to be very drastic, but it can be removed by only 0.054 inches of takeup on the motor base—less than one-sixteenth inch!

Consideration should be given to apparent differences in belt length on V-belt drives caused by sheave grooves which have worn down unequally. Where such a situation exists, regrooving the sheaves or replacing them with new ones would be the most economical procedure.

TAKEUP TABLE (In Inches)

Centers in Inches	Sag (in Inches) ½	1	2	3	4	5	6
20	.037	.130	.513	1.08	...	...	...
30	.025	.095	.343	.78	1.51	...	...
40	.010	.074	.240	.59	1.03	1.61	...
50	.008	.028	.20	.44	.83	1.27	1.86
75	.004	.018	.17	.30	.60	.87	1.25
100	...	.025	.054	.12	.40	.66	.94
200	...	...	.03	.06	.21	.37	.42
300	...	...	...	.035	.16	.29	.35

[1] Texrope Drive Dept., Allis-Chalmers Mfg. Co.

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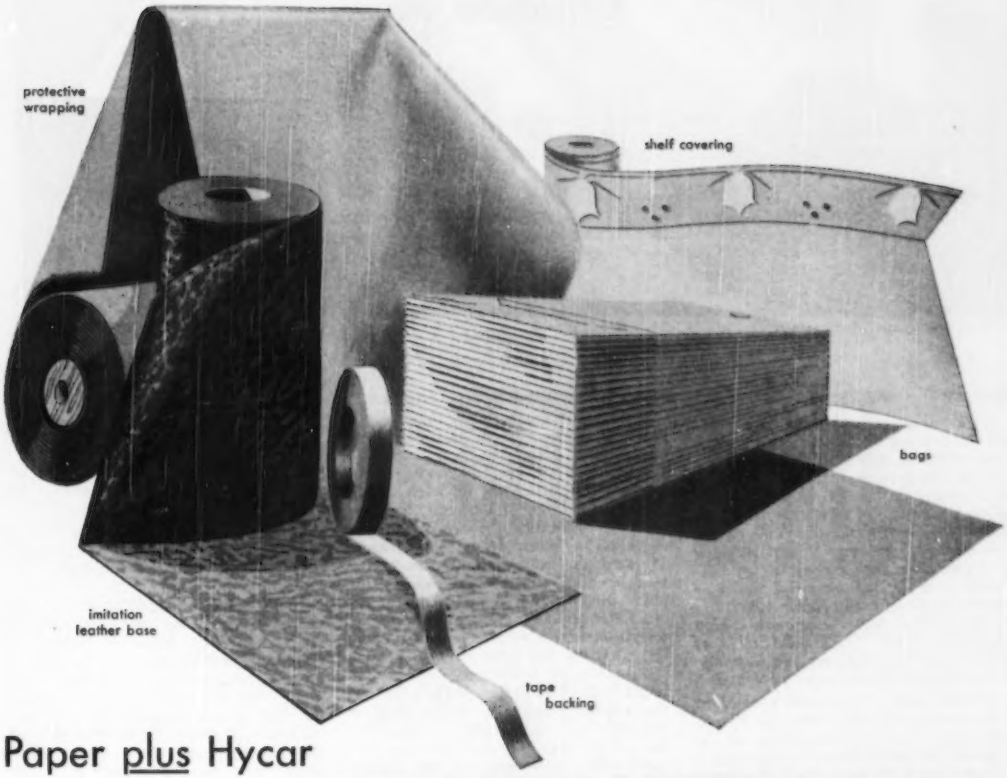

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The Oxidation of Sulphate Black Liquor

T. T. COLLINS, JR.[1]

With this article, "Tex" Collins rounds out the knowledge on another important phase of chemical recovery in the kraft mill and adds number twenty-four to his growing list of technical publications, patent and literature reviews, and monographs.

Now a chemical engineer with Thilmany Pulp and Paper Co. "Tex" has made a spare time hobby of library work in the years since he graduated from Rice Institute. He feels that many pulp and paper technicians do not make adequate use of the literature and his publications have been made to try to help and to stimulate other researchers in this respect.

During the past winter, accompanied by his wife, he was sent to Europe by Thilmany to study the kraft pulp and paper industry and its relation to stream pollution among other things.

Abstract

As a result of extensive pilot plant and laboratory investigations, a full-scale sulphate black liquor oxidation system has been erected and operated at Thilmany so that its effect upon the sulphur balance of the recovery system could be determined. The oxidation unit at Thilmany is not operated at present because an excess of sulphuric acid in the chemical make-up maintains the cooking liquor sulphidity in the desired range. Although a high sulphidity level (33% TAPPI) of white liquor was attained, no improvements in pulp quality were observed.

A high degree of oxidation of black liquor resulted in the reduction of sulphur loss by more than 90% in the vacuum and direct contact evaporators. The recovery furnace itself, however, proved to be the source of a large quantity of hydrogen sulphide when it was not properly operated and lacked sufficient air. This is true even if the black liquor has been oxidized.

As a complement to black liquor oxidation and a properly designed and operated recovery furnace, the Venturi-Scrubber with its remarkable ability for absorbing sulphur dioxide appears to be a satisfactory implement for reduction of both sulphur, and sodium losses from the kraft recovery system.

Stabilization of some of the sulphur compounds in kraft black liquor by oxidation appears to be one of the most interesting of recent chemical developments for the kraft process and a subject whose history is not widely known. As has been the case with many ideas worthwhile to our industry, information concerning this subject has been available in the literature for a number of years but has to a very great extent been overlooked by pulp mill research staffs in the United States when planning their programs.

The oxidation of sulphate black liquor is theoretically a relatively simple process although some practical difficulties have been encountered in applying the procedure as a full scale operation in some of the mills. In general, the procedure is to aerate the weak black liquor from the diffusers or washers in a suitable tower or scrubber until the residual sodium sulphide in the liquor is converted to sodium thiosulphate. The elimination or reduction of the sulphide in the liquor by oxidation has been said to reduce the amount of hydrogen sulphide lost in the vapors from the black liquor in the vacuum and disk evaporators or scrubbers and also during the combustion of the liquor in the recovery furnace. The conversion of the sodium sulphide in the liquor to the more stable thiosulphate is said to result in an increased retention of sulphur in the system with the result that the sulphidity of the white liquor is raised.

The advantages claimed for oxidation of black liquor are:

1. Maintenance of the sulphidity of cooking liquor at a higher value than is ordinarily attainable with a straight salt cake make-up.

2. Reduction in the amount of lime required for causticizing because of the higher sulphidity.

3. Partial elimination of that part of the odor nuisance of the kraft pulp mill that derives from the vacuum and direct contact evaporators and the recovery furnace.

4. Substitution for salt cake of soda ash or caustic soda as partial alkali make-up when they are cheaper sources of sodium than salt cake and the maximum attainable sulphidity is not desired.

5. Improving the suitability for rubber compounding of lignin precipitated from black liquor.

6. More uniform operation of the vacuum evaporators.

7. Reduction of corrosion in the vacuum and disk evaporators and scrubbers.

8. Production of a fuel in the form of dry liquor which is more suitable than that prepared from unoxidized liquor.

In the Thilmany mill in recent time there has been no great difficulty in maintaining the desired sulphidity of cooking liquor because of the addition of a large quantity of sulphuric acid along with the normal salt cake make-up. The use of a liquid niter cake and its effect on the mill chemical balance, particularly from the sulphur standpoint, have been described by Collins and West *(1)*.

Because of this and the fact that there has been no local public pressure to reduce the sulphur losses in the evaporator condenser and condensate waters and the recovery furnace stack gases, the problem of liquor oxidation has not been as pressing as it has been in other instances. Recently, however, several factors have pointed to the desirability of determining the effect of black liquor oxidation on a sulphate mill. These factors are:

1. Requirements for a higher sulphidity of cooking liquor. This, of course, may be of debatable value from the standpoint of pulp quality.

2. Curtailment of the use of sulphuric acid in chemical make-up if the supply of waste liquid niter cake becomes unavailable.

3. Decrease in the price of soda ash until it is less expensive on a sodium basis than salt cake.

4. Renewed public demands in some areas for reduction of steam and air pollution from sulphate pulp mills.

[1] Thilmany Pulp & Paper Co., Kaukauna, Wis.

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5. Necessity for reducing the corrosion in scrubbers on recovery furnaces and in vacuum evaporators. In addition, cleaner condensate or condenser water from the standpoint of sulphur content from the vacuum evaporators will make these sources of hot water more suitable as a supply for washing pulp or for hot ponds, etc. Corrosion of the washing equipment and odors of water in hot pond would be reduced.

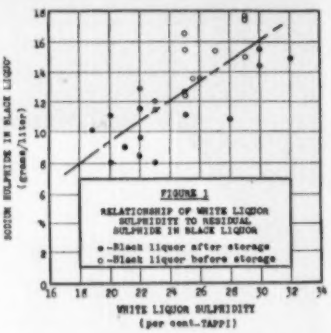
Based on several years of extensive pilot plant work on black liquor oxidation, a full-scale unit was erected early in 1949 at Thilmany to study the effect of oxidation on the sulphur balance of the sulphate mill. The oxidizing tower designed for our 150 tons of pulp daily capacity is relatively small, with the foam breaking equipment being of comparable size or less. It is sufficient to say that in our procedure all of the weak black liquor leaving the diffuser room is converted into foam in the oxidation tower and then broken down into liquid again before entering the vacuum evaporators. Very simple equipment is involved and there is no necessity for heating the air used for the oxidation.

During most of the testing period of the full-scale oxidation equipment no great difficulty in handling the foam created was encountered as the wood pulped at Thilmany (domestic and Canadian jack pine and lodgepole pine) had been stored in the yard for about nine months to a year. When green wood off the railroad cars was pulped, however, the quantity of broken foam was too great for the open skimmings storage tank to contain it. Since the skimmings tank was not sealed and equipped with a breaker for further reduction of foam and had an inadequate overflow sewer, the foam ran out on the floor and the unit had to be shut down until pulping of green wood was finished.

Early in our full-scale trials on liquor oxidation it was realized that the black liquor from pulp washed in diffusers apparently contains more residual sulphide than has been reported in liquor from vacuum washers in mills using white liquor of equivalent sulphidities. This indicates that considerably more oxidation of the black liquor may occur on the vacuum washers than in diffusers. The data shown in *Figure 1* should be compared with that given by Tomlinson and coworkers *(2)* and also that which they credit to Heath, Bray, and Curran. It is believed that the "quick" cook at Thilmany (40 minutes to pressure, 1 hour on pressure) may result in a lower sulphide consumption than for a longer cook and the fact that strong white liquor is used and the solids in the weak black liquor are approximately 19 to 20 per cent result in a high residual sodium sulphide content per liter.

Data on the oxidizing efficiency and operation of the unit over a period of time are given in *Table I*. The raw liquor was sampled as it entered the oxidizing unit and the oxidized liquor as it entered the vacuum evaporators. The sulphide content of the black liquor was determined by the Borlew-Pascoe method as described by Collins *(3)*.

Because of the fact that on shutdown and start-up of the mill we use our skimmings and foam tank for liquor storage and due to occasional


SODIUM SULPHIDE IN BLACK LIQUOR (grams/liter)
WHITE LIQUOR SULPHIDITY (per cent-TAPPI)
FIGURE 1
RELATIONSHIP OF WHITE LIQUOR SULPHIDITY TO RESIDUAL SULPHIDE IN BLACK LIQUOR
o -Black liquor after storage
o -Black liquor before storage

cooking of green wood which produces excessive foam, the oxidation system was not operated continuously over this time period. It was possible, however, to get a general idea of the effect of black liquor oxidation on the sulphidity of the white liquor produced. As described in a previous publication *(1)*, the use of a normal salt cake make-up at Thilmany under present operating conditions results in the establishment of the level of sulphidity at an average figure of 20 to 22 percent (TAPPI) and the addition of sulphuric acid in the form of liquid niter cake raises the sulphidity to a new range averaging 24 to 26 per cent with erratic values above and below the range. When the oxidation unit is operated without the acid make-up the sulphidity appears to hold reasonably well in the 24 to 26 percent range and may gradually go even higher with continued operation and 100 per cent oxidation of the residual sulphide in the black liquor. When the oxidizer is operated along with the feed of acid, the sulphidity level increases and holds in the 30 to 33 per cent range. One reason this range does not go higher is due to the fact that there is so much sulphide in the black liquor returning to the recovery at these high sulphidities that the percentage of oxidation efficiency of the present unit drops off. The highest sulphidity reached was 33 per cent (TAPPI) for one shift but that was higher than the average. With the proper arrangement of equipment, there is no reason why a somewhat higher sulphidity level could not be maintained in regular mill operation.

The power requirements for the Thilmany unit are quite low, being approximately 2.5 kwh./ton of pulp produced and requiring 0.08 installed horsepower per ton of daily pulp capacity. It is estimated that under the most severe foaming conditions resulting from the cooking of green wood, the power requirements might be doubled. When the air for oxidation is not heated, the black liquor is lowered 7 to 10 degrees F. below the temperature at which the unoxidized liquor formerly was fed to the vacuum evaporators.

TABLE I

OXIDIZING EFFICIENCY OF THE THILMANY UNIT

Date	Sodium Sulphide in Black Liquor (grams/liter) Raw Liquor	Oxidized Liquor	Oxidation Efficiency (%)	White Liquor Sulphidity (% TAPPI)	Comment
2-22-49	13.30	2.89	78	25.5	Extra sulphuric acid (Ansul Acid) fed with salt cake. Oxidizer started 2/21.
2-23	17.70	4.44	75	29.0	
2-24	15.10	5.10	66	29.0	Maximum sulphidity reached 2/26 was 33% for one shift with daily average 31% for 2 shifts. Mill shut down at 11 P.M. Oxidizer shut down at 9 A.M. 2/25.
	15.40	4.90	68	...	
2-25	17.50	4.05	77	29.0	
3-1	13.53	0.98	93	26.0	Regular salt cake make-up used. Oxidizer operated only in middle of week.
3-3	15.50	4.44	71	25.0	
3-4	12.75	0.58	95	25.0	No Ansul Acid fed.
3-9	12.60	0.82	94	25.0	
3-18	15.50	4.17	73	30.0	Ansul Acid fed.
4-7	13.60	1.50	89	27.0	Ansul Acid fed and oxidizer started 4/4.
4-8	10.77	1.72	84	28.0	Sulphidity went from 27% up to a range of 30 to 32% TAPPI.
4-15	14.40	1.70	88	30.0	
	13.60	2.65	81	...	
4-29	11.67	1.72	85	23.0	No Ansul Acid fed for a week previous to this test. Oxidizer operated for only one day prior to test.
	11.55	2.03	82	...	
	10.40	3.62	65	...	
5-18	12.90	0.66	95	22.0	Oxidizer operated for only one day prior to tests.
	11.50	1.01	91	...	
6-30	11.98	0.02	98	23.0	

Note: Ansul acid is liquid niter cake (⅓ water, ⅓ sulphuric acid, ⅓ salt cake).

The Effect of Black Liquor Oxidation on the Sulphur Losses from the Vacuum Evaporators

Some of the early work on the oxidation of black liquor has placed greatest emphasis on the magnitude of the loss of sulphur in the vacuum evaporators. In one case, approximately 26 percent of the total sulphur in unoxidized liquor was said to be lost at this step in the process although other investigators have found the loss to be considerably lower than this figure.

In our investigation of the oxidation of black liquor it was of importance to determine this sulphur loss under various conditions as the evaporators have always been considered a major source of pollution from the kraft mill.

The Thilmany evaporators are the conventional Swenson manufacture, five body, five effect, with a barometric jet condenser on the 5th (weak) effect. The non-condensibles from the 2nd and 3rd effects' steam chests are conducted into the vapor head of the respective effects. The condensates from the 2nd, 3rd, and 4th effects' steam chests, after flashing to the steam chest of the next effect, and the condensate from the steam chest of the 5th effect, are combined in one outlet to the sewer and in our tests this is termed the evaporator condensate. The vapor and non-condensibles from the 5th effect and the non-condensibles from the 5th and 4th effect steam chests enter the barometric condenser and this effluent is called the condenser water.

TABLE II

SULPHUR LOSSES IN THILMANY VACUUM EVAPORATORS AS SHOWN BY SULPHUR CONTENT OF LIQUORS

Sample	Investigator	Year	Sulphur Lost in Evaporators (%)	Methods of Analysis
A	Schmitt	1938	5.9	Sulphur to sodium ratio determined. Total sulphur by peroxide oxidation in a bomb. Total sodium by converting sodium to sulphate and evaporating and igniting it in a platinum crucible.
B	Collins	1946	4.4	Sulphur to sodium ratio determined. Total sulphur by sodium peroxide oxidation of diluted liquor sample. Total sodium by zinc uranyl acetate method.
C	Collins	1949	8.24 (a) 5.17 (b)	Sulphur to solids ratio determined. Total solids by TAPPI 625 method. (a) Total sulphur by TAPPI 625 method. (b) Total sulphur by sodium peroxide oxidation of a sample of the same liquor diluted.

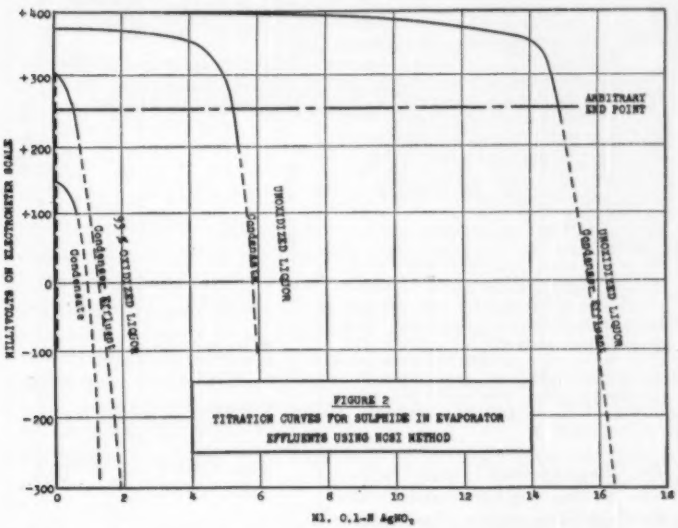


FIGURE 2
TITRATION CURVES FOR SULPHIDE IN EVAPORATOR EFFLUENTS USING NCSI METHOD

In determining the sulphur loss from the vacuum evaporators, the following procedures were used:

National Council for Stream Improvement (NCSI) Method (4)

This procedure is similar to the Borlew-Pascoe method for determining sulphide which has been discussed in an earlier paper *(3)*. With the exception of preparation of the sample, the procedure and equipment formerly used were adopted. In preparing the sample for the potentiometric titration a liter of the evaporator effluent was quickly added to 200 ml. of a cooled solution containing 48 grams of sodium hydroxide. As quickly as possible, to this sample were added 4 ml. of concentrated ammonium hydroxide and the potentiometric titration with 0.1-N silver nitrate using the "Blue-point" glass electrode and the silver-silver sulphide electrode was carried out.

Iodine Method

In this procedure a liter of evaporator effluent is quickly added to a jar containing 50 ml. of 0.1-N iodine solution (stabilized with 125 grams of KI/liter of iodine solution), 140 ml. of distilled water, and 10 ml. of glacial acetic acid. The iodine not consumed is determined by back titration with sodium thiosulphate solution using starch indicator.

Some checks have been made in the Thilmany mill for the total sulphur in the liquor before and after the vacuum evaporator. These data and

TABLE III

SULPHUR LOSSES FROM THE THILMANY VACUUM EVAPORATORS

Date	Black Liquor	Total Sulphur in Black Liquor (Lbs. H_2S/day)	Sodium Sulphide in Black Liquor Entering Evaporators (Grams Na_2S/liter)	Sodium Sulphide in Black Liquor Entering Evaporators (Lbs. H_2S/day)	Total Sulphur Decrease (Lbs. H_2S/day)	Hydrogen Sulphide in Evaporator Effluent (Lbs./day): Condensate NCSI	Condensate Iodine	Condenser Water NCSI	Condenser Water Iodine	Effluent Total NCSI	Effluent Total Iodine
3-22-49	Unoxidized	22,750	15.05	15,370	1180	10	..	389	0	399	...
4-8-49	Oxidized 84%	.....	1.72	1,750	....	0	13	45	117	45	130
4-15-49	Oxidized 81%	....	2.65	2,830	....	2	19	80	185	21	265
4-21-49	Oxidized ?	...	....	.....	....	0	17*	103	229	17	246
4-29-49	Oxidized 65%	.....	3.62	4,220	....	3	23	121	219	124	242
5-18-49	Oxidized 93%	.....	0.84	946	....	0	23	11	99	11	122
5-26-49	Unoxidized	.....	16.55	17,850	....	9	31	539	641	548	672

Note: 150 tons/day average kraft operation.

* Total sulphur determination run on another sample by peroxide oxidation calculated as 4.2 pounds of H_2S lost/day.

the methods used are given in *Table II*.

The limited experience we have had in determining total sulphur by peroxide oxidation indicates that if the dry sodium peroxide is added to a concentrated liquor sample so much heat is generated in the sample that sulphur in some form is evidently driven off. Our tests show more total sulphur in a sample if it is diluted with a little water before the peroxide is added. Subsequently the sample is boiled to complete the oxidation.

The data for sulphur losses from the vacuum evaporators when running on unoxidized and oxidized black liquor are given in *Table III*.

These data show a number of interesting facts. In one test on unoxidized liquor, approximately two thirds of the total sulphur entering the vacuum evaporators was in the form of sulphide. It appears that under normal operating conditions at the Thilmany mill on unoxidized liquor that less than 5 percent of the sulphur entering the vacuum evaporators is lost. The negative error in total sulphur determinations on concentrated liquor leaving the vacuum evaporators may be so great by some methods that an exaggerated idea of the sulphur loss results and it is the opinion of this investigator that this analytical error may account for some of the high sulphur losses given in the literature for vacuum evaporators. It may also be that black liquor from longer cooks has a lower residual alkalinity and losses sulphur in the evaporators much more readily even though the sulphide content of the liquor is lower than was found in our studies. The finding that the equivalent of less than 4 percent of the sodium sulphide in the black liquor appears in the condenser water and condensate during operation on unoxidized liquor to consume iodine was unexpected as it had been believed that this decomposition would be considerably higher. It should be pointed out that at Thilmany the noncondensible gases are mixed with water in the evaporator jet condenser.

In our tests on the evaporator effluents by the NCSI method we did not find any second inflection in the curve of the titration with silver nitrate versus voltage that would indicate the presence of mercaptans. As we have also not found mercaptans in black liquor samples when analyzing them for sulphide by the Borlew - Pascoe method, we did not expect to find them in the evaporator effluent.

For one sample of condensate examined we found that the NCSI method showed zero hydrogen sulphide while the iodine method gave 17 pounds per day loss and a total sulphur determination gave 4.2 pounds per day loss. The thought has occurred that some of the hydrogen sulphide in the condensate might oxidize to thiosulphate when transferring the sample from the sample pipe to the iodine solution. If we consider the various reactions which might then take place

$$H_2S + I_2 \rightarrow S + 2HI$$
$$2CH_3SH + I_2 \rightarrow (CH_3)_2S_2 + 2HI$$
$$2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$$

We find that four sulphur atoms in thiosulphate react with one molecule of iodine whereas one sulphur atom in hydrogen sulphide reacts with an equivalent amount of iodine. On the basis of the total sulphur found in the sample, if it had been in the form of thiosulphate it would have calculated to approximately 1 pound of H_2S per day on the basis of its reactivity with iodine. Obviously then, the iodine is not reacting only with the thiosulphate since there is not sufficient sulphur present to account for it. This is also true in the case of the mercaptan and hydrogen sulphide. It would be meaningless to try to attempt to theorize about these findings until this phase of the problem has been investigated more thoroughly.

In any event, the results of oxidation on reducing the sulphur loss from the vacuum evaporators are important percentage-wise. It appears that 100 percent oxidation of the black liquor will reduce the sulphur loss from the vacuum evaporators, as shown by the NCSI test, by better than 90 percent.

From a practical standpoint, it can be pointed out that a considerable reduction in stream pollution should result as the evaporator condensate and condenser water have only a faint odor of turpentine when the liquor is highly oxidized.

Typical titration curves by the NCSI method for the evaporator effluents when the mill was running on unoxidized and on 93 percent oxidized black liquor are given in *Figure 2*. It is to be noted that the initial electrode readings for the samples taken during the oxidized liquor run were less than the arbitrary endpoint for sulphide but that on stirring a few minutes the reading reached a more positive equilibrium value from which the titration could be carried out.

The Effect of Black Liquor Oxidation on the Sulphur Losses from the Disk Evaporators, the Recovery Furnace, and the Venturi-Scrubber

Quantitative data for the gaseous sulphur losses in recovery furnace stack gases have been reviewed by Collins and Collins *(5)* in an earlier publication [TABLE 4]. Some of the data given is based on the use of oxidized liquor in the furnace and very low hydrogen sulphide losses are reported in this case.

In our work on the determination of the losses at various points, such as after the air heater or before the disk evaporator, after the disks or before the Venturi - Scrubber, and after the

TABLE IV

SULPHUR LOSSES FROM THE THILMANY RECOVERY FURNACE, DISK EVAPORATORS, AND VENTURI-SCRUBBER

Run	Date	Liquor Used	White Liquor Sulphidity (% TAPPI)	Furnace Nozzle	Air to Furnace Excessive	Chemical Make-Up to Recovery (Lbs./ton of pulp)*			Gas Analysis Data (Grains/cu. ft. dry gas at STP) Sulphur Dioxide				Calculated Stack Loss Hydrogen Sulphide (Lbs./day)	Absorption Efficiency of Venturi Scrubber (%)
						$NaSO_4$	H_2SO_4	$NaCO_3$ to Venturi-Scrubber	Ahead of Disks		After Disks		After Venturi-Scrubber	
									SO_2	H_2S	SO_2	H_2S	SO_2	H_2S
A	3-22-49	Unoxidized	32	18		175 (26,180)	49 (7,400)	40 (6,000)	1.150 [0.890]	0.080 [0.062]	0.328 [0.240]	0.979a [0.471]	....	....	....	4000
B	4-7-49	Oxidized 89%	27	20	.....	198 (29,655)	72 (10,750)	156 (24,000)	0.155 [0.120]	0.391 [0.294]	0.084 [0.314]	[0.008]	0.012	[0.321]	92	1960
C	4-15-49	Oxidized 88%	30	18	Moderate	175 (29,688)	27 (9,615)	27 (4,100)	1.080 [0.814]	0.322 [0.243]	0.375 [0.261]	0.405 [0.282]	0.012 [0.008]	0.335a [0.236]	97	1700
D	4-29-49	Oxidized 84%	23	18	Moderate	160 (24,000)	0	0	0.075 [0.057]	0.217 [0.165]	0.049 [0.035]	0.299 [0.210]	....	....	.. ..	1200
E	4-29-49	Oxidized 65-82%	23	22	High	160 (24,000)	0	0	0.099 [0.074]	0.857 [0.636]	0.049 [0.033]	0.748 [0.502]	....	....	.. ..	3500
F	5-18-49	Oxidized 91-95%	22	21	Moderate	220 (33,000)	0	0	0.047 [0.033]	0.897 [0.648]	0.013 [0.009]	0.528 [0.368]	....	....	.. ..	2300

Size 18 nozzle (18/32" B and W nozzle) is for low furnace production and size 22 is for high production.
* Based on pulp produced in digester house rather than pulp solids through the recovery system; the latter would be the more accurate basis for comparison.
( ) Daily total. [ ] Grains/cu. ft. wet gas at STP.
a Gas tests run in sequence rather than simultaneously.

Time IS MONEY...

1st Printer: Honestly, Collins, didn't you lose your shirt on that big broadside job you chiseled us out of a couple of months ago?

2nd Printer: We made a tidy profit and we did not chisel.

1st Printer: It takes a lot of time to run out a hundred thousand four-color sheets—and time is money at *our* shop.

2nd Printer: We *saved* time by using the right kind of paper. Color forms registered to a hair—inks dried without offsetting.

1st Printer: That paper must have been terribly high priced.

2nd Printer: It was priced low enough to get the order from some keen competition. The reason why it was low was the same as the reason our bid was low—SPEED.

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scrubber or the final stack gases, we have employed the method recommended in an earlier article *(6)* for the differentiating measurement of hydrogen sulphide and sulphur dioxide.

Table IV gives the concentration of the hydrogen sulphide and sulphur dioxide in the gases after the various units under differing conditions of operation of the furnace. It is of interest to find this gas composition data is not markedly different from that given in one of our earlier publications [*Table IV (1)*]. It should be kept in mind that any mercaptans present in the gases would appear as hydrogen sulphide in this analysis. We have not found any mercaptans in the black liquor so if they do appear in the stack gases that would probably be due to the destructive distillation of the liquor in the furnace. The possibility exists that there may be sulphur trioxide present in the stack gases but it is the opinion of this investigator that it does not exist in the gases beyond the cotton filter in the fume catcher section of the sampling train because these gases appear to be clear and to contain no sulphuric acid mist.

In order to check the stack gases of the presence of mercaptans we used the sampling equipment previously described *(6)* for measuring hydrogen sulphide and sulphur dioxide in a mixture of gases. Instead of the absorption bottles containing iodine, bottles containing normal sodium hydroxide solution were substituted after the fume catcher portion of the sampling train. Although five absorption bottles in series each containing a liter of caustic solution, were used, and 18.6 cubic feet of wet stack gases at STP were sampled in the test, 96 per cent of the hydrogen sulphide was trapped in the first absorber, 4 per cent in the second, and none in the other three bottles. The caustic solution was analyzed for hydrogen sulphide by the NCSI method *(4)* and no evidence of mercaptan was shown by this test. In the extreme negative range of the titration curve, however, it was observed that something was present which consumed approximately 3 percent as much silver nitrate as was consumed by the hydrogen sulphide. No effort has been made to identify this substance.

Several things of importance are indicated by this data. *Run A* shows that operating the furnace at low production rate with considerable excess air results in the burning of the sulphur gases to sulphur dioxide with very little production of hydrogen sulphide in the furnace. The reaction of the sulphur dioxide and carbon dioxide with black liquor together with the effect of heat results in the release of a considerable quantity of hydrogen sulphide from the unoxidized black liquor in the disk evaporators. As the air flow to the furnace is reduced *(Run C)*, even on oxidized liquor the hydrogen sulphide produced in the furnace is appreciable. *Run D* at lower sulphidity causes us to conclude that at lower sulphidities and on oxidized liquor the total sulphur gas loss is reduced as compared with liquor containing more sulphur. The difference in the chemical make-up of *Runs C* and *D* would tend also to accentuate this difference. It should be pointed out that ordinarily when a small nozzle is used in the furnace our black liquor supply is low so, in order to make sufficient white liquor, the make-up is increased. When a large nozzle is used, the make-up, on a proportional basis is reduced because an excess of liquor is on hand.

Runs E and *F* show typical conditions existing when the 120-ton B and W-Tomlinson furnace is operated near the top of or beyond the designed capacity at rates as great as 175 tons per day based on the liquor solids burned. Even from highly oxidized liquor the release of hydrogen sulphide in the furnace is very great and approximately equal to that from the disk evaporator when the mill is operating *(Run A)* at high sulphidity on unoxidized liquor. One unexpected finding was that on highly oxidized liquor the disk liquor appears to absorb a portion of the hydrogen sulphide produced in the furnace. If this proves to be characteristic of the operation on completely oxidized black liquor, then the use of an efficient black liquor scrubber of some sort instead of the disk may help to recover some of the hydrogen sulphide produced in the furnace. It may turn out on further investigation that this phenomenon of absorbing the hydrogen sulphide occurs only at high percentage oxidation of low sulphide content liquor which has a high residual alkalinity.

It is difficult, when considering this data, not to appear to be too favorably prejudiced in pointing out the excellent absorption of sulphur dioxide which occurred in the Venturi-Scrubber operating on fume solution during *Runs B* and *C*. This unit reduces the sulphur dioxide in the stack gases to a negligible quantity which of course an electrostatic precipitator does not do. Unfortunately, hydrogen sulphide cannot be absorbed to any noticeable extent at the pH (8 to 9) at which the scrubber liquor is held by occasional additions of soda ash when necessary during the periods of high production of sulphur dioxide in the furnace. This data showing the absorption of sulphur dioxide in alkaline fume solution should be compared with that given by Collins and West *(1)* (See *Table IV*, that publication) when the scrubbing medium was 65 percent solids black liquor. It is obvious that a Venturi-Scrubber operating on 65 percent solids oxidized black liquor in place of the disk evaporator *plus* the electrostatic precipitator would be a "complete package" unit in which most of the fume and sulphur dioxide would be recovered, little or no hydrogen sulphide would be evolved after the furnace, and desired evaporation of liquor with furnace gases would be achieved.

Summary

Sufficient data has been gathered during this investigation of the oxidation of sulphate black liquor in a mill scale unit to indicate that it is a worthwhile process and may eventually become a standard operation in kraft recovery. The only major difficulty which has not yet been eliminated from the Thilmany unit has been the problem of excessive foaming when the black liquor results from the cooking of green wood. It is believed that the use of proper foam breakers of the mechanical type and a proper arrangement of equipment will solve this.

The oxidation system at Thilmany is not operated at present because an excess of sulphuric acid in the chemical make-up maintains the white liquor sulphidity in the desired range. Economics slightly favor the use of salt cake associated with this sulphuric acid in the form of liquid niter cake and for that reason its use is continued. Actually, from the standpoint of atmospheric pollution, the addition of any form of excess sulphur above a normal salt cake ratio in kraft makeup is not as desirable as the oxidation of black liquor. The former procedure maintains a high sulphidity by increasing the sulphur input with a consequent increase in sulphur loss but at a higher equilibrium sulphur content in the system. Oxidation, on the other hand, attains the high sulphidity level by keeping the sulphur in the system and reducing the amount lost to the atmosphere.

Although the period of high sulphidity (30 to 33% TAPPI) attained at Thilmany was maintained for only a few days, no beneficial results from the standpoint of pulp strength were observed and the pulp mill foremen complained that higher liquor tables than usual had to be used to cook to the same permanganate number because only half the sulphide is said to be effective in pulping. If anything, the shive content of the pulp increased slightly at the high sulphidities but this may have been due to running the pulp on the high side of the desired permanganate range.

The unit installed at Thilmany for one pass through of the black liquor oxidizes approximately 90 to 95 percent of 10 to 12 grams of residual sodium sulphide per liter but when the sulphide reaches 15 to 17 grams per liter the efficiency drops to 65 to 75 percent. For 100 percent oxidation of high sulphide content liquor it might be the better procedure to pass the liquor through two small units in series rather than to use recirculation or large units. It is anticipated that mills with vacuum washers will find considerable oxidation taking place on the washers so that for equivalent white liquor sulphidity the residual sul-

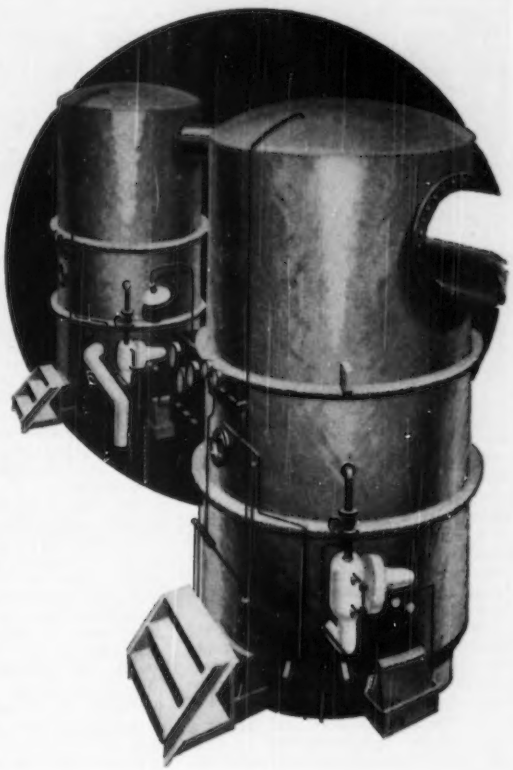
Pulp Mill Cuts Costs...

by concentrating salt caustic solution from chlorine plant

OBJECTIVE: *To effect economical, uninterrupted concentration of iron-free salt caustic solution from diaphragm cells in electrolytic chlorine plant in pulp mill. Chlorine and caustic soda to be used in bleaching process; crystallized salt to be returned to cells.*

EQUIPMENT: *Double-effect, multi-circulation evaporator fabricated of Lukens Nickel-Clad Steel. Multi-circulation to insure continuous operation. Nickel-surfaced interior of body to resist corrosive action of concentrated salt caustic soda solution and insure a pure product. Economical steel backing to provide strength and rigidity. Cooling after evaporation to reduce salt content of concentrated caustic.*

RESULT: *Low cost, continuous operation without appreciable entrainment loss. Low maintenance cost. Savings in salt and caustic make chlorine production even more economical.*



The double-effect evaporator shown above was designed by Zaremba Company and fabricated by Horton Steel Works, Ltd. for The KVP Company Ltd., Espanola, Ontario. Lukens Nickel-Clad Steel was used because it provided the protection of solid corrosion-resistant metal with clad steel economy.

An example such as this shows how the coordinated ingenuity of designer, engineer, fabricator and materials supplier can result in the efficient, economical answer to an equipment problem. This is applied *Lukenomics*. For Lukenomics combines the experience of equipment designers and builders with Lukens' knowledge of materials and their application gained over 140 years as the world's leading producer of specialty steel plates, heads and steel plate shapes.

It's sound judgment to put Lukenomics to work on your equipment problems. There are progressive fabricators who can do this for you. Get in touch with them, or write our Manager of Marketing Service, stating your problem. Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

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phide in the black liquor will be somewhat lower than it is in a mill which uses diffusers.

Our findings have been that on the basis of the change in total sulphur content of unoxidized liquor passing through the vacuum evaporators only about 5 percent of the total sulphur is lost at this point. Analysis of the evaporated effluents and condenser water by conventional methods shows this loss to be no more than half this figure. It is believed that analytical errors may account for some of the high values given in the previous literature.

It appears that complete oxidation of black liquor results in the reduction of sulphur released as hydrogen sulphide from the vacuum and disk evaporators by upwards of 90 percent. Minimizing the loss at these points by oxidation results in the sulphur balance of the mill attaining a higher sulphide equilibrium depending upon three factors:

1. The ability of the unit to oxidize the residual sulphide in the black liquor — the degree of oxidation controls the sulphur loss from the vacuum and disk evaporators and may to some extent tend to shift the sulphur balance in the furnace away from hydrogen sulphide and more toward sulphur dioxide since the sulphur gases will be produced by the decomposition of thiosulphate in oxidized liquor instead of the sulphide in unoxidized liquor.

2. The method of operation of the furnace so as to avoid the formation of hydrogen sulphide — if proper conditions are maintained in the furnace, if it is not operated beyond designed capacity, and if sufficient air of proper distribution is used, the sulphur will leave as sulphur dioxide rather than hydrogen sulphide. This can be accomplished when operating on unoxidized liquor. On the other hand, improper operation of the furnace on completely oxidized liquor will result in a great loss of sulphur as hydrogen sulphide.

3. The effectiveness and arrangement of the equipment used to clean the gases leaving the furnace — the conventional disk evaporator as we know it is not an efficient scrubber for the absorption of sulphur dioxide. Unless it reacts (and this is questionable) with alkali in the flue gases after the disks, the sulphur dioxide which is not absorbed in the disks will pass through an electrostatic precipitator and out to the atmosphere. If a Venturi-Scrubber is used for fume recovery, the sulphur dioxide will be absorbed in the scrubber liquor if the fume contains alkali and thus will return more sulphur, relative to sodium, than the dry dust collector. If soda ash has to be added to the scrubber liquor to keep it alkaline, then we are merely converting soda ash to salt cake. In this case, although we have reduced the sulphur loss, we have not increased the sulphur to sodium ratio of the make-up above that found in salt cake and part of the make-up (that derived from the added soda ash) has the disadvantage of being added as a liquid to be evaporated subsequently. If other types of direct contact evaporators (cyclones, disks, cascades, etc.) in present use are efficient absorbers for sulphur dioxide then stack recovery of this gas does not present a problem.

However, if present cascades, cyclone scrubbers, etc., are not efficient absorbers for sulphur dioxide then the best arrangement that we can conceive in accordance with U. S. practice and with known equipment to minimize sulphur gas pollution from the kraft recovery is to use:

1. A black liquor oxidizer to reduce the hydrogen sulphide loss from the vacuum, high pressure and/or direct contact evaporators.

2. A furnace properly operated so as to produce sulphur dioxide instead of hydrogen sulphide.

3. A Venturi-Scrubber following the furnace to operate on 60 to 65 percent solids black liquor to recover dust and sulphur dioxide without the addition of alkali or the extra evaporation required for the liquor from the present fume solution scrubber, or

3a. If a direct contact liquor evaporator is not used after the furnace, a Venturi-Scrubber or some other efficient wet collection system operating on fume solution should be used to capture the dust and absorb the sulphur dioxide in the scrubbing solution which must be maintained in an alkaline condition.

The major question that we have not yet mentioned in this conection is, "Will black liquor oxidation reduce the smell of a kraft mill?" As far as odors from the digester relief and blow, etc., are concerned, oxidation of weak black liquor does not conceivably affect them if the same white liquor sulphidity is maintained. It should be possible to eliminate a portion of the odor from these sources by various methods. It is the opinion of this investigator that the odor that is noticeable at a distance from the kraft mill derives mostly from the stack gases and that, although an appreciable quantitative reduction in sulfur gas loss is achieved by oxidation, the qualitative effect from the odor standpoint may not be too noticeable until almost all the hydrogen sulphide is eliminated from the gases. We think this will not be accomplished, in light of our present knowledge, until *all* the conditions that we have set forth for efficient sulphur recovery are met by arrangement and operation of equipment.

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6. Collins, T. T., Jr., Paper Ind. 28, no. 5:680-686; no. 6:830-834; no. 7:984-986 (August, September, October, 1947).

The following article is also on the oxidation of black liquor.

7. Collins, T. T., Jr., Paper Trade J. 130, no. 3:37-40 (January 19, 1950).

Note: The author has applied for patents in the field of black liquor oxidation in the U. S. and Canada.

NEW pH STANDARDS

WASHINGTON, D.C. — Four new pH standards, intended to provide fixed points at the upper and lower ends of a standard pH scale, have been selected by chemists of the National Bureau of Standards. The new solutions extend the accuracy of standard scales made to conform with the three middle-range standards[1] which the Bureau now distributes to the chemical industry.

Measurements of the degree of acidity and alkalinity play an important part in the research laboratory and in the regulation of such modern industrial processes as food preparation, sugar refining and the manufacture of paper, textiles and dyes. These measurements are expressed in terms of hydrogen-ion concentration, or pH, on a scale ranging from a pH of almost zero (very high acidity) to a value near 14 (very high alkalinity). Although exact measurements of acidity can be made with instruments now in use, there has been a lack of uniformity among the results obtained because of the variety of definitions of the pH unit popular among chemists and the consequent difference in methods of calibrating the instruments.

The National Bureau of Standards has long recognized the need of a universally accepted scale of acidity, analogous to the International Temperature Scale. To encourage the adoption of such a scale, the Bureau has, for several years, distributed three standard samples of known pH in the United States and abroad. These samples fix the scale at pH 4, 7, and 9, and the pH of intermediate points is obtained by interpolation. Unfortunately, this scale is not uniform at its ends, and additional standards are needed to reduce the error of measurement at low and high pH.

In a recent study, R. G. Bates, Gladys G. Pinching and E. R. Smith

[1] For further technical details, see Standardization of the pH scale, NBS Technical News Bulletin, *31*, 138 (1947).

Selling Books in the Streets in Germany in the 16th Century. Illustration from the Bettmann Archive

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But it was not until cheap paper and the modern printing press made low-cost printing possible that book publishing rose to vast dimensions. Today in the United States alone 500 million books are published annually for distribution through retailers and by mail. Thus, book publishing and book selling have advanced education, culture, and entertainment, and have contributed substantially to the growth of the pulp and paper industry.

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of the Bureau's physical chemistry laboratory determined the extent of inaccuracy at the ends of the practical pH scale. They concluded that an instrument calibrated with the present solutions of intermediate acidity will usually yield results that are low by 0.02 to 0.05 unit or more above pH 11. Below pH 2.5, errors as great as 0.03 unit, either positive or negative, were found. In general, solutions of strong acids and bases display larger errors than buffered solutions.

In the course of the work 41 solutions of possible value were examined. Out of these, the following four standards were selected:

1. A mixture of sodium bicarbonate and sodium carbonate, both at 0.025 molar concentration, with a pH of about 10 at room temperature.

2. A 0.01 molar solution of trisodium phosphate, pH about 11.7.

3. A solution of potassium hydrogen tartrate saturated at room temperature, pH about 3.6.

4. A 0.01 molar solution of potassium tetroxalate, pH about 2.1.

Although the new standards lengthen the accurate portion of the scale in both directions, the measured pH of highly acid and highly alkaline solutions must still be assigned an uncertainty of at least ± 0.03 unit.

The Bureau plans to add the potassium hydrogen tartrate and the potassium tetroxalate to the Standard Samples it issues when an adequate supply of the purified materials has been obtained, tested and bottled for distribution.

APPEARANCE MEASUREMENT

Plans are now being made to repeat for the third year on appearance measurement of materials which is given at the Henry A. Gardner Laboratory, Bethesda, Md., under the direction of Richard S. Hunter, their Chief Optical Engineer. The course will be given at least three times between November 1, 1950 and June 30, 1951. One course is planned for November 27-December 1. Others will follow as applications are received to fill them.

Each course lasts one week and there are two lectures each day. Laboratory periods allow for work on different appearance-measurement instruments, preferably on specimens brought by the students. The course is designed to help technologists in different fields make and interpret measurements of the appearance of materials such as paints, papers, ceramics, leathers, plastics, textiles, rubbers, oils, foods, etc. It is planned to limit each class to 20 students, the maximum number that can be accommodated for the laboratory work and individual discussion which is provided.

The course is educational, not promotional. The primary aim of the course is to explain appearance materials with respect to physical causes, psychological appreciation, and psychophysical measurement. Lectures are also given on instruments, their components, and trouble shooting, and on basic techniques for preparing and handling materials for measurement.

There is a registration fee of $25.00 to cover lunches and part of the cost of materials used in the course. This is waived for owners of Gardner Laboratory appearance measuring instruments; or, it may be applied toward the subsequent purchase of any of the optical instruments sold by the Laboratory. If enough applicants are interested in one type of material, such as paint or food, it may be possible to enroll them all in the same group. Experience suggests that the course will be more useful if it is possible to concentrate on the appearance-evaluation problems of one type of material.

SULPHATE SUSCEPTIBILITY

A rapid test for accurately measuring the susceptibility of portland cements to attack by sulfate ground waters has been developed by W. C. Taylor and R. H. Bogue at the National Bureau of Standards. The new procedure,[1] which determines the extent to which aluminates in the cement can react with the sulfate ions present, not only reduces the time required for the test from several weeks or months to one day, but also provides more valid results than methods previously used.

Some concrete structures deteriorate in the presence of ground waters containing soluble sulfates while others do not. Where deterioration occurs, it appears to be due principally to a reaction between the sulfate ions in the ground water and the aluminate ions in the cement. In the presence of calcium hydroxide, crystals of calcium sulfoaluminate ($3CaO.Al_2O_3.3CaSO_4.31H_2O$) are formed. The resulting volume increase of about 227 percent may cause cracking and splitting of the structure.

Resistance to this type of deterioration may be induced either by the chemical nature of the cement or the physical character of the paste. Thus a dense paste which is nearly impermeable to the flow of solutions will remain sound in sulfate solutions much longer than a lean and porous mixture. Nevertheless, an improvement in structure merely slows down the rate of attack. Long-range resistance to sulfate attack can only be attained by using cement whose chemical composition makes it naturally resistant.

In the past, the sulfate resistivities of various types of cements have been evaluated by preparing bars or slabs of mortar and noting their change in length, strength, or appearance after storing in sulfate solutions for periods up to several months. This procedure has two notable disadvantages: the time required is excessive, and the physical character of the specimen may have a pronounced effect on the results. The test developed at the Bureau, on the other hand, is made directly on portions of the cement rather than on specimens of the paste. It thus makes it possible to evaluate correctly the inherent resistance of the cement to sulfate action as distinguished from the physical effects due to the nature of the specimen.

This test measures the amount of sulfate removed from solution in a definite time when a small sample of the cement (adjusted to a known sulfate content) is continuously shaken with a saturated lime-water solution. The sulfate in the cement dissolves quickly in the water-cement fluid mixture and reacts with the aluminates to form the difficultly soluble calcium sulfoaluminate. In the early period, which may be as long as two hours, the reaction proceeds rapidly, but after four hours it becomes much slower. After six hours, the concentration of sulfate in the solution changes so slowly that it can be measured with very little error. The difference between the original SO_3 content of the mixture and that of the liquid at six hours is then calculated as percentage of the SO_3 originally in the cement and is designated "sulfate reaction value." This value represents the amount of SO_3 that has been rendered insoluble by interaction with the aluminates and thus indicates the susceptibility of the cement to attack by sulfate waters.

Sulfate reaction values obtained for a large number of cements at the National Bureau of Standards have shown a high correlation with the behavior of concrete and mortar specimens of these cements that had been stored in sulfate solutions for some time. The rather striking results indicate that it is possible to separate cements into three groups with respect to their sulfate susceptibility. Thus, a cement having a sulfate reaction value up to 50 can be expected to have considerable resistance to sulfate attack. The lower the value, the greater will be the resistivity of the cement. Concrete or mortar structures made with such a cement will have satisfactory durability when exposed to sulfate waters except where disintegrative forces other than sulfate reaction may be involved.

At the other end of the scale, a cement having a sulfate reaction value above 65 can be considered relatively nonresistant to sulfate attack. Structures made with such a cement cannot be expected to last long when exposed to sulfate waters, regardless of the quality of the workmanship or the presence of beneficial agents.

Cements having sulfate reaction values between 50 and 65 are somewhat on the borderline. While they cannot in general be depended upon to resist sulfate attack, structures made of these cements may be durable in sulfate exposure if they are dense and impermeable and are free of other disintegrative agents. In this range of cements, good workmanship is absolutely necessary, and air entrainment would undoubtedly be beneficial.

[1] For further details, see A sulfate susceptibility test for portland cements, by W. C. Taylor and R. H. Bogue, *J. Research NBS 45*, September (1950) RP2128.

Patent Abstracts

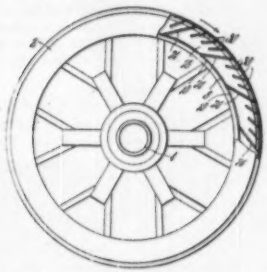
● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

United States

U.S. 2,520,274—Bark Stripper and Splitter. John T. Bill Cline, Eureka, Calif. Filed March 10, 1947—Issued August 29, 1950.

A bark stripper comprising a plurality of vertical wedges and a plurality of horizontal wedges, each of said wedges having its cutting edge at a front end, the cutting edges of said horizontal wedges being drivable into the end of a log under the bark, said horizontal wedges being positioned between the vertical wedges, each of said wedges having a transverse opening adjacent its rear end, a flexible connector extending through the openings to connect the wedges to each other for movement as a unit, and means connected to the front ends of certain of the wedges to exert a pulling force thereon.

U.S. 2,520,327 — Cylinder Mold Papermaking Machine. Clifton N. Nilson, Springfield, Mass., assignor to Cheney Bigelow Wire Works, Springfield, Mass. Filed May 17, 1947—Issued August 29, 1950.



A cylinder mold comprising in combination, opposite end head structures, an inner hollow cylinder secured at opposite ends to said head structures, beam supporting annular rings around and extending radially outwardly from said inner cylinder and secured thereton in spaced relation longitudinally thereof, longitudinal primary and secondary beams extending longitudinally of the inner cylinder and secured to said rings and spaced circumferentially of the cylinder, a plurality of said secondary beams being disposed between adjacent primary beams and inner longitudinal edges of said secondary beams being spaced outwardly from said inner cylinder and corresponding inner edges of said primary beams being secured to the periphery of said cylinder, the transverse width of said primary and secondary beams being disposed generally radially of the mold and inclining inwardly and rearwardly relative to the direction of rotation of the mold, said inner cylinder being provided with circumferentially and longitudinally spaced openings there-through, and a foraminous covering structure around and supported by outer longitudinal edges of said beams.

U.S. 2,520,356—Method for Inhibiting Corrosion of Ferrous Metal. John W. Bishop, Cranford, N. J., assignor to Tide Water Associated Oil Company, Bayonne, N J. Filed September 25, 1946—Issued August 29, 1950.

Method for inhibiting corrosion of a ferrous metal upon exposure to highly humid-rust inducing atmospheres which comprises coating the surface of said metal with a substantially non-corrosive liquid having dissolved therein a small amount, sufficient to substantially increase the rust-preventive characteristics of said liquid, of a tertiary alkyl alkylolamine containing an alkylol group esterfied with a long chain fatty acid obtained by hydrolysis of a member of the group consisting on naturally-occurring fats and naturally-occurring fatty oils.

U.S. 2,520,397—Spraying Apparatus for Internally Coating Pipes. Marion C. Green, Wichita, Kans. Filed December 5, 1946 — Issued August 29, 1950.

An apparatus adapted to be moved axially within a pipe or tube for coating the internal surface of the pipe or tube with spray of a thermoplastic or phenolic type resinous solution having a rapidly evaporable solvent, for forming on the evaporation of the solvent a protective coating on said surface, comprising an induction head, an eduction head including a sprayer axially supported coincident with the axis of the pipe, conductors connecting the heads for respectively supplying the fluid and a propellant solution to the sprayer for issuance therefrom to form an annular spray directed against the surface of the pipe as the device is progressively moved therein from end to end of the pipe, each conductor comprising a plurality of detachable sections engageable with each other and with other like sections to vary its length and the distance between the heads, a valve in the induction head for controlling the flow or fluid to the fluid conductor, a valve in the eduction head controlling the flow of solution thereto from the solution conductor, a controlling rod connected to the second named valve and extending thereto through the solution conductor from the induction head, means for coordinately operating the first named valve and the valve rod, and means for supporting the device for travel in the pipe and centering the device therein.

U.S. 2,520,402—Wire-Wrapping Machine. Philip R. Hirsh, Montclair, N. J., assignor to Lock Joint Pipe Company, East Orange, N. J. Filed August 18, 1944—Issued August 29, 1950.

A machine for applying wire about a tank or like stationary object, comprising a structure having a vertical height at least as high as an object about which a wire is to be wrapped, a track for guiding said structure about said object, means including wheels supporting said structure on said track, a wire-wrapping mechanism, means carried by said structure of elevating said wire-wrapping mechanism, and means for advancing said structure over said track, said last-named means including a motor and connections from said motor to said wheels for driving said wheels to propel said wire-winding mechanism by advancement of said structure.

U.S. 2,520,768—Coating Roller Adjusting Mechanism. Joseph Kunicki, Brooklyn, N. Y., assignor to Arthur Tickle Engineering Works, Inc., Brooklyn, N. Y. Filed June 17, 1947—Issued August 29, 1950.

In a machine of the character described, three rolls adapted for conveying coating or printing material, one of said rolls being supported by stationary means, first and second pairs of pivoted members and each pair supporting one of the two other rolls, the first pair of pivoted members being longer than the second pair of pivoted members and the pivots of said pairs being offset with respect to each other, rods pivotally connected at one end with the pivoted members respectively of the first pair, cam means forming contact of one pair of pivoted members with the other pair so that both pairs pivot in unison in one direction in response to a pulling force exerted on said rods, manipulatable means for exerting a pulling force on said rods causing the pivotal movement of both pairs of pivoted members as aforesaid, thereby breaking the contactual relation of the three rolls, and resilient means acting on the second pair of pivoted members causing the return pivotal movement of both pairs of pivoted members wherein the pivotal movement of the second pair causes a corresponding movement of the first pair through the intervention of said cam means, thereby effecting the normal cooperative relation of the three rolls, upon operation of the manipulatable means withdrawing the pulling force on said rods.

U.S. 2,520,805—Carboxy Alkyl Cellulose Impression Materials and Impressions Made Therefrom. Homer van Beuren Joy, Montclair, N. J., assignor, by direct and mesne assignments, of one-half to Montclair Research Corporation, a corporation of New Jersey, and one-half to Ellis-Foster Company. Filed March 30, 1948—Issued August 29, 1950.

An impression material containing a water-soluble salt of a carboxy alkyl cellulose in a mixture with a setting agent of a salt of a metal forming a gel with the carboxy alkyl cellulose, in proportions to give a gel structure when set from a paste with water.

U.S. 2,520,900 — Coated Paper and Method of Making Same. Frederick H. Frost, Portland, Maine, assignor to S. D. Warren Company, Boston, Mass. Filed July 29, 1946—Issued September 5, 1950.

Process of preparing aluminum coated paper, which comprises applying to a surface of a paper base a layer of an aqueous mineral coating composition whose solids content comprises a mineral pigment, a water-dispersible adhesive and a substantially neutral waxy material, said waxy material being present in said composition in an amount by weight corresponding to from 1 to 15 percent of the weight of the total solids content and being thoroughly dispersed in the aqueous medium, drying the mineral coating layer a layer of wax-free aqueous coating composition applying of said drying mineral coating layer, the solids content of which comprises finely divided aluminum, a water-dispersible adhesive and an agent effective for rendering said adhesive water-insoluble during the further processing of the product, and drying the resulting product.

U.S. 2,520,915 — Preparation of Sodium Chlorite. George L. Cunningham, New York, N. Y., and Frank Pretka, St. Paul Minn., assignors to Diamond Alkali Company, Cleveland, Ohio. Filed April 26, 1945—Issued September 5, 1950.

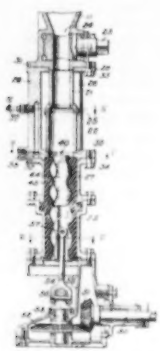
In a process for preparing sodium chlorite substantially uncontaminated with sodium chlorate, substantially uncontaminated with sodium chlorate, the steps of forming a solution containing in admixture sodium ions, chlorite ions, chlorate ions, and potassium ions derived from a compound selected from the group consisting of potassium hydroxide and potassium chlorite, evaporating said solution under reduced pressure at a temperature below about 70°C. to obtain the precipitation of potassium chlorate, separately re-

covering said potassium chlorate, and then further evaporating said solution under reduced pressure and at a temperature below about 70°C. to precipitate substantially anhydrous sodium chlorite.

U.S. 2,520,963 — Production of Improved Cellulosic Materials. Richard E. Reeves, New Orleans, La., assignor to the United States of America as represented by the Secretary of Agriculture. Filed June 6, 1947—Issued September 5, 1950.

A process of making alcoholized modified cellulose characterized by improved resistance against attack by hot dilute aqueous alkalies, as compared with hydrocellulose of the same fluidity, and characterized by a copper number less than one, comprising: subjecting substantially dry cellulose to the action of an alcoholic solution containing an acid of the group consisting of sulfuric, hydrochloric, and para-toluene sulfonic acid, said solution containing no more than 2 percent of water, the acid concentration in the alcohol being no greater than 2-normal, the alcohol being a primary alcohol taken from the group consisting of lower primary alkanols and benzyl alcohol, the cellulose being subjected to the simultaneous action of the acid and alcohol, and maintaining them in contact at least until substantially maximum fluidity of the product is attained and until an alcoholized cellulose having a copper number less than one is formed.

U.S. 2,521,103 — Vortex Separator for Paper Pulp. Frederick William Vickery, deceased, late of Guildford, England, by Arthur Minute, Wandsworth Common, London, Harold Eric Baliol Scott, Hayes, Lionel Alexander Hunt, Fulham, London, and Reginald Wilfrid Covington, Woodford, Green, England, administrators. Filed November 8, 1949—Issued September 5, 1950.



A vortex separator for paper pulp comprising in combination: a cylindrical vortex chamber; an inspection chamber for receiving undesirable material extracted in said vortex chamber; an open duct connecting said chambers; a valve at the end of said inspection chamber opposite said duct, said valve comprising a movable element and a stationary element, said elements coacting to form a complete seal against egress from said inspection chamber; and means for moving said movable element at a predetermined constant speed, said elements coacting to cause undesirable material to flow from said inspection chamber at a constant rate regardless of the static head within said inspection chamber.

Canadian

467,345 — Methods of Preparing Melamine. Alexander F. MacLean, Stamford, Connecticut, U.S.A., assignor to American Cyanamid Company, New York, New York, U.S.A. Filed December 20, 1945 — Issued August 15, 1950.

A method of producing melamine which comprises reacting two mols of dicyandiamide with one mol of a ketone in the presence of at least two mols of a strong acid and mixing the resulting condensation product with an aqueous solution containing at least 3 mols of a strong alkali.

467,460 — Continuously Forming Fibrous Material. Karl Rollius, Douglas D. Adams, and John D. Risher, Canton, Ohio, U.S.A., assignors, by mesne assignments, of seventy-six and eighty-nine one-hundredths percent to Robert E. MacKenzie, Canton, Ohio, U.S.A., and of twenty-three and eleven one-hundredths percent to Louis V. Bockius, Hartville, Ohio, U.S.A. Filed September 2, 1949 — Issued August 15, 1950.

The method of continuously forming a multiple channel structure of laminated fibrous material, including gluing superimposed strips of the material together, slitting the laminated strip into laterally adjacent strips, progressively gripping the strips on opposite surfaces and forming them into channels while simultaneously feeding them forward continuously, laterally abutting the channels and gluing them together to form composite channels, passing said composite channels under overlying plies of fibrous material, and then progressively gripping the channels and overlying plies and forming the plies around the composite channels while feeding them forward continuously.

467,539 — Dry Size and Methods of Preparation. James Keithley Farrell, Wilmington, Delaware, U.S.A., assignor to Hercules Powder Company, Wilmington, Delaware, U.S.A. Filed October 23, 1945 — Issued August 22, 1950.

A method of preparing a saponified rosin dry size in the form of discrete, free-flowing, readily water-soluble particles and having a high apparent density in bulk, which comprises the step of discharging an aqueous mixture comprising saponified rosin and containing not less than 22 and up to about 30% by weight of water, based on the weight of saponified rosin and water, at a temperature of from about 340° to about 380°F. and under a pressure of from about 110 to about 200 pounds per square inch, into a drying atmosphere maintained at substantially atmospheric pressure and at a temperature of from about 240° to about 325°F., thereby obtaining the saponified rosin dry size in a finely-divided form containing not over about 8% moisture and having an apparent density in bulk of from about 20 to about 35 pounds per cubic foot.

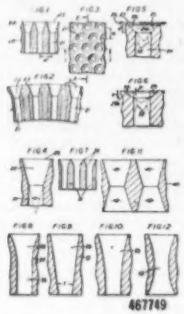
A method of preparing a saponified rosin dry size in the form of discrete, free-flowing, readily water-soluble particles and having a high apparent density in bulk, which comprises saponifying rosin with a substantially chemically equivalent amount of caustic alkali solution to provide a saponification mixture containing not less than 22 and up to about 30% by weight of water, heating the saponification mixture to a temperature of from about 340° to about 380°F. and under a pressure of from about 110 to about 200 pounds per square inch, and then discharging the saponification mixture at said temperature and pressure countercurrent to a circulating drying atmosphere maintained at substantially atmospheric pressure and at a temperature of from 240° to about 325°F., and substantially completely desiccating the saponification mixture and producing the saponified rosin dry size in finely-divided form containing less than about 8% moisture by weight and having an apparent density in bulk of from about 20 to about 35 pounds per cubic foot.

467,621—Corrosion Inhibitors. Robert C. Swain, Riverside, Connecticut, U.S.A., and Joseph H. Paden, Glenbrook, Connecticut, U.S.A., assignors to American Cyanamid Company, New York. Filed December 26, 1942 — Issued August 29, 1950.

In the conversion of a compound selected from the group consisting of cyanamide and dicyandiamide to a derivative thereof, and including the step which consists in heating said compound while dispersed in a solvent comprising liquid ammonia in a closed pressure vessel in which all the internal surfaces in contact with the reaction mixture consist of a ferrous alloy selected from the group consisting of high-chrome and stainless steel, the improvement which consists in protecting the metallic surfaces exposed to the reaction mixture by adding from 50 to 1,000 parts of ammonium phosphate per million parts of the reactants.

In the conversion of a compound selected from the group consisting of cyanamide and dicyandiamide to a derivative thereof, the step which consists in heating said compound while dispersed in a solvent comprising liquid ammonia in a closed pressure vessel in which all the internal surfaces in contact with the reaction mixture consist of a ferrous alloy selected from the group consisting of high-chrome and stainless steel, the improvement which consist in carrying out the reaction in the presence of from 50 to 1,000 parts of a compound which forms phosphate ions in the reaction mixture whereby corrosion of the pressure vessel is inhibited.

467,749 — Suction Rolls for Paper-Making Machines. Ralph Chalinor Heys, Sheffield, County of York, England, assignor, by mesne assignments, to Sandusky Foundry & Machine Company, Sandusky, Ohio, U.S.A. Filed May 27, 1948—Issued August 29, 1950.



A paper machine suction roll shell comprising a perforated metal shell, the perforations in said shell being in the form of bores having relatively deep tapered mouths on the outer periphery of the shell, said mouths defining an included angle of from 14° to 35°, said bores having inner portions extending from the bottom of the mouths through the inner wall of the shell and said inner portions defining an included angle of not more than 15°.

A paper machine suction roll shell comprising a perforated metal cylinder, the perforations in said cylinder being in the form of bores having tapered mouths on the outer periphery of the cylinder, said mouths having depth of at least ½ inch and defining an included angle of from 14° to 35°, said bores having inner portions extending from the bottom of the mouths through the inner

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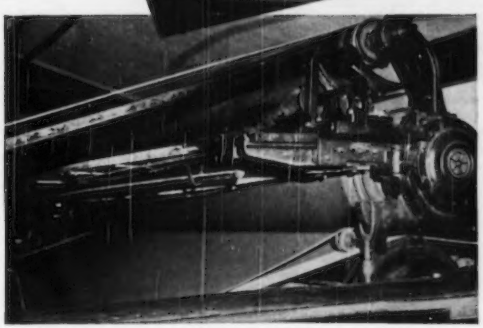
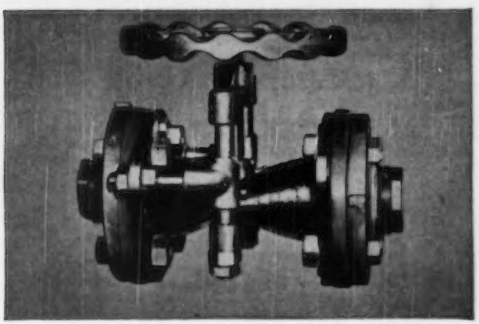


CUSTOM MADE ROLL COVERINGS. When your rolls need recovering, let U. S. Rubber engineers analyze operating conditions in your mill, check operating speeds, working pressures, types of stock and all the other factors to insure the best possible covering for your needs.



NEW RUBBER PINCH VALVE outwears metal when carrying abrasive or corrosive mixtures, and insures controlled flow of paper pulp. Its flexibility offsets misalignment in pipes, absorbs vibration, breaks up galvanic action. Compactly designed, requires remarkably little maintenance.

Paper mill officials have long depended on United States Rubber technicians for aid in more efficient production and more economical operation. It will pay you to make use of the "U. S." advice and experience. Write to:

PRODUCTS OF

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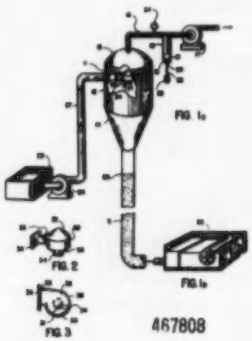
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

wall of the shell, and said inner portions defining an included angle of not more than 15°.

Can. 467,808 — Deaeration of Paper Stock. Judson A. DeCew, Mount Vernon, New York, U.S.A. Filed December 24, 1947 — Issued September 5, 1950.



The method of conditioning dilute paper stock for treatment in unflocculated condition which comprises establishing and maintaining an enclosed main gaseous body under substantially constant reduced atmospheric pressure having a discharge leg, continually supplying dilute paper stock into the gaseous body, emitting such stock into the body in the form of a fine spray whereby dissolved as well as entrained gas escapes from the stock and is sucked from the gaseous body while degassified stock falls unobstructedly into the leg, accumulating such fallen stock in the leg to a level that is not substantially within the main gaseous body continually removing such stock from the accumulation thereof in the leg while minimizing air-leakage into the leg, and then supplying such conditioned stock to the sheet forming machine.

The method of deaerating air-bearing fibres in dilute paper making stock which comprises establishing and maintaining a gaseous body under the effect of vacuum to be at reduced pressure, force-feeding into an atomizing zone such stock in the form of a dilute water suspension containing such fibres, forcibly projecting such suspension from such zone under atomizing conditions that render the suspension into gas-suspended discrete fine particles of water and of fibres in such a state of subdivision that the effect of the vacuum can reach to the fibre particles to remove air occluded by those fibre particles and can reach the water particles to substantially deaerate them, descending such deaerated water particles and deaerated fibre particles to collect in a pool still under the effect of such vacuum wherein the deaerated fibres are resuspended in deaerated water in which the fibres sink and remain in substantially air-free condition, and conducting such air-free water-suspension to a sheet joining machine.

Can. 467,860 — Capacitor Paper. Richard J. Hopkins and Reavis C. Sproull, Pittsfield, Massachusetts, U.S.A., assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada. Filed September 26, 1945 — Issued September 5, 1950.

A wood pulp paper which is suitable as a dielectric medium in electric capacitors and having a density of about .75 to .60 and containing about 91 to 95 per cent cellulose, one to five per cent pentosans, .5 to 5.0 per cent lignin, and .15 to .30 per cent ash residue and a power factor within a range of about .085 to 0.60 per cent at 60°C. in a 60 cycle electric field.

An electric capacitor comprising co-operating armatures, a plurality of sheets of paper there between, said paper having a density of about .60 to .80, a power factor no greater than about .085 per cent at 60° C. in a 60 cycle field and being prepared from kraft pulp containing about 91 to 95 per cent cellulose, about one to five per cent pentosans, about .5 to 5.0 per cent lignin and having an ash content of about 0.15 to 0.30 per cent and a liquid dielectric material permeating said paper.

Can. 467,873—Treatment of Fibrous Material. Erven White, Granville, Ohio, U.S.A., and Clayton A. Smucker, Newark, Ohio, U.S.A., assignors to Fiberglas Canada Limited, Oshawa, Ontario, Canada. Filed October 15, 1942 — Issued September 5, 1950.

As an article of manufacture, a mass of mineral wool fibres bonded together into an integral bat with a binding agent distributed throughout the mass, the bonding agent comprising polymerized furfuryl alcohol and an emulsifying agent for the furfuryl alcohol.

Can. 467,920—Water-Resistant Films. Henry Michael Collins, Ottawa, Ontario, Canada, and George Osman Morrison, Shawinigan Falls, Quebec, Canada, assignors to Shawinigan Chemicals Limited, Montreal, Quebec, Canada. Filed June 8, 1945 — Issued September 5, 1950.

A composition of matter for the formation of coatings and films comprising as essential constituents, a stable aqueous emulsion containing from 30 per cent to 65 per cent polyvinyl acetate as the resin phase, hydrophilic colloidal material as the emulsifier in an amount effective to stabilize the emulsion and lying between 0.5 per cent and 4 per cent by weight of the emulsion, and an organic liquor conditioning agent, selected from the group consisting of neutral solvents and swelling agents for the resin having solubility in water not exceeding 10 per cent, and being within the range from 1 per cent to 25 per cent by weight of the emulsion, the emulsion being such that the co-ordinates x and y are at least as small as those satisfied by the equation $x(y-0.5)=9$ in which the co-ordinate x is the average particle size in microns and the co-ordinate is the per cent emulsifying agent based by weight on the resin, x not exceeding 5, the amount of the conditioning agent, the amount of emulsifier and the average particle size being correlated to render said composition capable of forming when deposited a continuous water-resistant film of the resin, which will not re-emulsify or disintegrate when immersed for a period of 24 hours in water at a temperature of 20°C.

Can. 467,921 — Vinyl Resin Emulsions. Wilfred K. Wilson, Springfield, Massachusetts, U.S.A., assignor to Shawinigan Resins Corporation, Springfield, Massachusetts, U.S.A. Filed March 20, 1947 — Issued September 5, 1950.

A process for preparing a stable aqueous emulsion containing more than 25 parts for each 100 parts of water of a polymerized normally liquid, water-insoluble polymerizable compound containing a terminal ethylene group, which comprises carrying out the polymerization of said polymerizable compound while dispersed in an aqueous medium containing for every 100 parts of water, 0.01-2.0 parts of a non-polymerizable surface tension depressant 1-10 parts of a hydrophilic colloid and a sufficient amount of a water-soluble per compound to supply 0.001-0.1 part of available oxygen, the polymerizable material being introduced into said aqueous medium at such a rate that not over about 25 parts of monomer for every 100 parts of water are present substantially throughout the polymerization.

Can. 467,922 — Vinyl Resin Emulsions. Wilfred Kelso Wilson, Springfield, Massachusetts, U.S.A., assignor to Shawinigan Resins Corporation, Springfield, Massachusetts, U.S.A. Filed April 29, 1947—Issued September 5, 1950.

A process for preparing a stable aqueous emulsion of polyvinyl acetate which comprises polymerizing vinyl acetate while dispersed in an aqueous medium containing for every 100 parts of water, 1-10 parts of a hydroxyl ethyl cellulose, 0.01-2.0 parts of a non-polymerizable surface tension depressant characterized by containing an alkali metal sulphonate of an alkyl aryl hydrocarbon, said hydrocarbon containing 10-20 carbon atoms, and a sufficient amount of a water soluble persulphate to supply 0.001-0.1 part of available oxygen, the vinyl acetate being introduced at such a rate that not over about 25 parts of monomer for every 100 parts of water are present substantially throughout the polymerization, and the weight ratio of water to total vinyl acetate introduced and polymerized is between 100:30 and 100:60, whereby the polymer particles have a diameter of 0.05-0.2 micron.

Can. 467,924 — (Sec. 28A—Expires April 14, 1965). *Sizing Compositions and Their Preparation and Uses.* Harco Jacob Tadema, Amsterdam, The Netherlands, assignor to Shell Development Company, San Francisco, California, U.S.A. Filed November 5, 1947—Issued September 5, 1950.

A product for sizing paper, comprising an aqueous emulsion of at least partially saponified colophony and an extract of petroleum consisting essentially of hydrocarbons of the group consisting of naphthenic and aromatic hydrocarbons.

An aqueous emulsion suitable for sizing fibrous materials which comprises a stable dispersion in water of 5 to 30 parts by weight of substantially saponified colophony and 95 to 70 parts by weight of an extract of petroleum consisting essentially of naphthenic and aromatic hydrocarbons, the water content of the mixture being at least 60 per cent based upon the total weight of said dispersed components and water.

A process of preparing an emulsion suitable for use in sizing fibrous materials which comprises melting together in 10 to 20 parts by weight of pine rosin with 90 to 80 parts of an Edeleanu extract of a petroleum lubricating oil fraction boiling above 125°C. at 1 mm. mercury pressure, which extract has been extracted with gasoline and the resulting raffinate distilled after removal of solvent to take off at least the lower boiling 50 per cent of the raffinate, agitating the melt at a temperature not greater than 10°C. above its melting point while adding thereto an aqueous potassium hydroxide solution of 8 per cent to 15 per cent concentration in an amount equivalent to about 90 per cent to 100 per cent of the requirement for complete saponification of the rosin present, cooling to about 30°C. to 40° C., and diluting the resulting water-in-oil type emulsion with sufficient water to bring the water content to at least 60 per cent by weight of the mixture, thus reversing the type of emulsion and forming a dispersion in which the particles have an average diameter of less than 1 micron.

A process of preparing an aqueous emulsion which comprises melting together 5 to 30 parts by weight of rosin with 95 to 70 parts of an extract from heavy petroleum oil consisting largely of naphthenic and aromatic hydrocarbons separated from said oil with a solvent selective for said hydrocarbons, agitating the melt while adding thereto an aqueous alkali metal hydroxide solution of 5 per cent to 30 per cent concentration in an amount equivalent to about 90 per cent to 100 per cent of the requirement for complete saponification of the rosin present, and diluting the resulting mixture with sufficient water to form an emulsion of the oil-in-water type containing from 20 per cent to about 50 per cent of dispersed components and having a pH of 8 to 9.5.

ASSOCIATIONS

ENGINEERING CONFERENCE

CINCINNATI, Ohio—The 5th Annual Engineering Conference of the Technical Assn. of the Pulp and Paper Industry was held under the General Chairmanship of George H. Pringle, chief engineer of Mead Corp. at the Netherlands Plaza Hotel.

The first day's meetings were, as in the past, devoted to general sessions covering mill design, hydraulics, research, and materials handling.

On the second day, discussions of maintenance data sheets and drying and ventilation were followed by round table discussions by committees. In the evening the Allied Industries gave their annual cocktail party and dinner.

The third day's sessions covered steam and power, chemical engineering and electrical engineering. The division luncheon was served at noon. The afternoon completed the formal sessions.

The last day was devoted to plant visits to Allis-Chalmers, Cincinnati Rubber, Cincinnati Milling Machine, Black-Clawson, Economy Pump, Shuler and Benninghofen, Armco, Shartle Bros. and the new Hutchins Power Station.

The registration for the meeting totaled 350.

The Ohio section of TAPPI sponsored this meeting with the following conference sponsors: Allis-Chalmers Mfg. Co.; Armco Steel Co.; Bauer Bros. Co.; Black-Clawson (Shartle & Dilts); Brown & Singer Co.; Cincinnati Rubber Co.; Economy Pump Co.; J. H. Day Co.; Duriron Co.; J. F. Freeman & Sons, Inc.; Hauser-Stander Tank Co.; Hermann Mfg. Co.; Jeffrey Mfg. Co.; Link-Belt Co.; Littleford Bros.; Lunkenheimer Co.; Manducter Machine Co.; Midwest-Fulton Machine Co.; Mokry & Tesmer Co.; National Electric Coil Co.; Ohio Knife Co.; Orr Felt & Blanket Co.; Orville Simpson Co.; Powell Valve Co.; Regal Belting Co.; Roots-Connersville Blower Co.; Simonds Worden White Co.; John Van Range Co.; Vulcan Copper Co.; and Wente Electric Co.

PENNJERDEL MEETS

PHILADELPHIA, Pa. — The fall meeting was held at the Warwick Hotel, October 6 and 7. The first day was devoted to a gathering of the clan, golf and a visit to Container Corp. of America, Philadelphia plant. Saturday morning the P.P.P.'s started a busy day with another one of their outstanding skits, even to the extent of bringing in "Romeo and Juliet." Serious business started shortly afterward with the invocation by Rev. Charles B. Mauck. The 1950-51 officers are: Glen T. Renegar, chairman; Elmer Mitchell, 1st vice-chairman; George Suydam, 2nd vice-chairman. The resignation of Mrs. Alice R. Dow as secretary-treasurer was accepted with regret. Mrs. Dow has served this Division for 26 years. Glen Renegar, chairman on behalf of the Pennjerdel Division, gave Mrs. Dow in appreciation of her long and faithful service a scroll signed by all present and a Lady Hamilton wrist watch.

Joseph Paciello and James Trail were respectively elected as secretary and treasurer. The papers were then presented: "Effect of Paper Machine Demand on Power Production" by Robert Ridings, power engineer, Container Corp. of America; "Influence of Machine Clothing on Paper Quality" by C. O. Fronmuller, chemical research supervisor, Scott Paper Co. Charles Ackley, president, American Pulp and Paper Mill Superintendents Assn., Inc., spoke at the Joint Luncheon. Other papers presented were: "Use and Maintenance of Suction Equipment" by C. M. Connor, technical director, and Romeo Tourangeau, general superintendent, W. C. Hamilton & Sons; "Micro-Organism in Paper Making Felts" by Dr. S. J. Buckman, Buckman Laboratories. The meeting closed with the P.P.P.'s cocktail party followed by dinner and entertainment.

The committee in charge was: Registration, Alice R. Dow; Hospitality, Howard Street; Mill Visit, Elmer Mitchell; Property, George Suydam; Entertainment - Banquet, James Trail, L. H. Bidwell, Jr.; Publicity, Joseph Paciello; P.P.P.'s, Walter B. Morehouse; P.P.P.'s Breakfast, Alan Boyd; Golf, Albert Hartley; Cocktail Hour, John C. Dieffenderfer.

POWER SHOW

NEW YORK—The 19th National Exposition of Power and Mechanical Engineering, sponsored by the American Society of Mechanical Engineers, in conjunction with the Society's annual meeting, will be held at Grand Central Palace, 480 Lexington Avenue, New York 17, on November 27 to December 2. The Hours are daily, 11 a.m. to 10 p.m. except Wednesday and Saturday, when it will close at 6 p.m. Admission is by invitation and registration. The general public is not admitted. Admission is limited to executives, technical and operating men interested in power plant and allied equipment.

Products of leading specialists in all phases of power production and industrial use, including the general fields of light, heat and power, will be displayed. These include fuel handling, (coal, oil and gas), pre-combustion treatment to improve combustion, all methods of combustion in commercial use, smoke prevention—treated as a means to improve economy, control of fly-ash—treated as a public protection. Various heat processes will be shown as well as steam and Diesel engines, electric generating sets, motors and power drives.

MEETING IN MEMPHIS

RUSTON, La.—The second technical meeting of the Deep South Section of Forest Products Research Society will be held in Memphis, Tenn., October 26 and 27 at the Peabody Hotel. The meeting has been planned to include something of interest to all persons concerned with forest products and they are invited to attend whether or not they are FPRS members.

A partial list of the papers to be presented includes, "Adhesive Bonded Refrigerator-Freight Cars" by Francis H. Snyder, president, Snyder Chemical Corp., Bethel, Conn., and Clarence J. Plisky, vice-president, Pressed Steel Car Co., Chicago, Ill.; "The Status of Student Training for Industry" by Professor Richard W. West of Louisiana State University; "Application of Log Grades in the Tennessee Valley" by W. N. Darwin, Chief of the Forest Utilization Section, TVA, Norris, Tenn.; "A Comparison of the Treating Characteristics of Pentachlorophenol Petroleum Solutions and Coal Tar Cresote in the Pressure Treatment of Southern Yellow Pine Poles" by E. A. Behr and R. T. Rogers of Chapman Chemical Co., Memphis; "Impregnation of Wood With Solid Metal Alloys" by Professor Frederick H. Vogel of Alabama Polytechnic Institute, Auburn, Ala.; and "The Oak Wilt Disease" by T. W. Bretz, Pathologist, USDA, Columbia, Mo. Other authors who will present papers include E. L. Patton, Head of Naval Stores Research Division of the USDA Southern Regional Research Laboratory, New Orleans; E. G. Wiesehuegel, Acting Chief, Dep't. of Forestry Relations, TVA, Norris, Tenn.; R. D. Carpenter, Forest Utilization Service, Southern Forest Experiment Station, New Orleans; and E. D. Marshal, Head, Forest Products Department, Texas Forest Service. Nickey Brothers, Inc., of Memphis will also present a paper covering a phase of their research being carried on through Southern Research Institute of Birmingham, Ala.

BOLTON AWARD CONTEST

There is still time for persons eligible and interested in the Fourth Bolton Award Contest to submit their entries on the subject, "Why Profit Is Everybody's Job." The contest closes at midnight, November 1, 1950; so manuscripts postmarked up to that time will be accepted.

The contest carries $3,250 in cash prizes — first prize, $1,000; second prize, $750; third prize, $500; and ten additional prizes of $100 each.

All entries should be mailed to the Secretary and Treasurer, The American Pulp and Paper Mill Superintendents Assn., 111 West Washington street, Chicago 2, Ill.

Fall Meeting on Fibrous Agricultural Residues

Northern Regional Research Laboratory, Peoria, Ill., November 13-14

PRELIMINARY PROGRAM NOVEMBER 13:

8:00-9:00 a.m. — Northern Regional Research Laboratory Lobby—Registration.

9:00 a.m.—Conference Room. "Opening of meeting and introductions." S. I. Aronovsky, Chairman, Fibrous Agricultural Residues Committee of TAPPI.

9:15 a.m. — "Welcome to Laboratory." R. T. Milner, Director, Northern Regional Research Laboratory.

9:30 a.m.—Technical Papers:

1. "Protecting Large Stacks of Baled Straw with Sisalkraft." Ralph J. Anderson, The Sisalkraft Co., Chicago, Ill.

2. "Why Cut Straw?" M. L. Rankin, Taylor, Stiles and Co., Riegelsville, N. J.

3. "Strawboard Mill Layout at H and D, Trenton, Ont." W. H. Palm, Hinde and Dauch Paper Co., of Canada, Ltd., Toronto, Ont.

4. "Handling Practices for Liquid Caustic Soda." R. A. Springer, Diamond Alkali Co., Cleveland, Ohio.

5. "Review of Theory in Application of the Jonsson Screen." Sven Fahlgren, Bird Machine Co., South Walpole, Mass.

12:30 p.m.—Group Luncheon.

1:30 p.m. — Technical Paper (continued):

6. "Disc Mill Refining of Strawboard Pulps." L. E. Eberhardt and C. K. Textor, Bauer Brothers Co., Springfield, Ohio.

7. "Results with Turbo Pulp Refining." L. F. Herman, Gruendler Crusher and Pulverizer Co., St. Louis, Mo.

8. "Straw Procurement." Round table discussion.

9. "A New Method of Cleaning Straw Pulp." C. G. Krancher, Ball Brothers Co., Noblesville, Ind.

4:30 p.m.—Plant Tour, Pabst Brewing Co., Peoria Heights, Ill.

5:00 p.m.—Social Hour, 33 Room, Pabst Brewing Co.

6:30 p.m.—Group Dinner, Blue Ribbon Hall, Pabst Brewing Co.

"What is Today's Steel Situation." L. W. Hesse, Director of Community Relations, Keystone Steel and Wire Co., Bartonville, Ill.

November 14:

9:30 a.m.—Conference Room, Northern Regional Research Laboratory.

Meeting of TAPPI Fibrous Agricultural Residues Committee.

Reports of subcommittees.

Report on straw preservation experiments.

Report on and demonstration of laboratory corrugator.

Plans for February and Fall 1951 meetings.

2:00 p.m.—Plant Tours:

1. Northern Regional Research Laboratory.

2. Keystone Steel and Wire Co., Bartonsville, Ill.

JOIN TREES FOR TOMORROW

RHINELANDER, Wis. — The Badger Paper Mills, Inc., Peshtigo, and the Wisconsin Michigan Power Company, whose offices are located in Appleton but whose power sites and watershed forest lands are located in north eastern Wisconsin and Michigan, have joined Trees for Tomorrow, Inc.

Edwin Meyer, president of the paper mill, and W. E. Schubert, vice president of the power company, have been named members of the board of directors.

Folke Becker, president of Trees for Tomorrow, said that the pattern laid down when the industry sponsored reforestation organization was founded by nine paper mills, six years ago, would continue in the future. This program revolves around in-the-field assistance to private landowners in distributing trees, preparing forest management plans, as well as projecting good conservation practices.

The original territory of six counties has expanded to eight. Membership has increased from the original nine mills to twelve mills and two power companies. Membership of Trees for Tomorrow is made up of the following firms: Rhinelander Paper Co.; Marathon Corp.; Consolidated Water Power & Paper Co.; Mosinee Paper Mills; Wisconsin Public Service Corp.; Hoberg Paper Mills, Inc.; Ward Paper Co.; National Container Corp. of Wis.; Tomahawk Pulp Co.; Wausau Paper Co.; Whiting Plover Paper Co.; Kansas City Star Co.; Flambeau Paper Division; Badger Paper Mills, Inc.; Wisconsin Michigan Power Co.

Officers are: Folke Becker, president; E. B. Hurst, first vice-president; C. G. McLaren, second vice-president; D. B. Smith, secretary-treasurer; M. N. Taylor, executive director.

HOLD ANNUAL HI-JINKS

LOS ANGELES, Calif. — Paper Mill Men's Club of Southern California held its 16th annual Hi-Jinks at the Riviera Country Club, Los Angeles, September 15, with over 400 in attendance. This is the yearly event when the PMMC entertains the wholesale paper and twine industry. This year James Billings, Channel Paper & Supply Co., Santa Barbara, "accepted" the party in behalf of the Paper Merchants. Official host was the PMMC president, Irvin E. Damon, Northern Paper Mills. He was assisted by Roland Wolf, vice-president, Graham Paper Co.; L. A. "Bill" Gardiner, secretary, Nekoosa-Edwards Paper Co.; and C. J. Warren, treasurer, Paper Container Mfg. Co.

The outstanding feature of the event was the Jobbers beating the PMMC at softball, score 4-5, for the first time in the association's history. Lou Levine, Sterling Products, Inc., was the long-time chairman of this event.

General chairman of the Hi-Jinks was J. C. Fischer, Sherman Paper Products Corp.; vice-chairman, B. E. Calhoun, Marathon Corp. Other chairmen: Finances, F. R. Ward, Powell River Sales Corp.; Entertainment, L. W. Lamboy, West Coast Coverage Co.; Golf, Jack Perrin, Towlsaver, Inc.; Program, J. H. Leatherman, Jobbers Specialty Co.; Reservations, Jack Leiser, Pioneer Wrapper Co.; Greeters, Dwight Tudor, Pioneer-Flintkote Co.

The annual dinner and floor show followed a busy day devoted to various sports.

Golf honors went to Jack Holmes of Fibreboard Products who won the low gross trophy. Bob Loane of Brown Co. won the first flight and Roland Wolf of Graham Paper Co. was runner up. Second flight, George Wieman of Western was winner with George Wolfe of Johnson Carvell, runner up. In the third flight, Bill McBride of U. S. Envelope Co. won the honors and Merle Paup of Comfort Paper Corp. was runner up.

TRAINING FILM

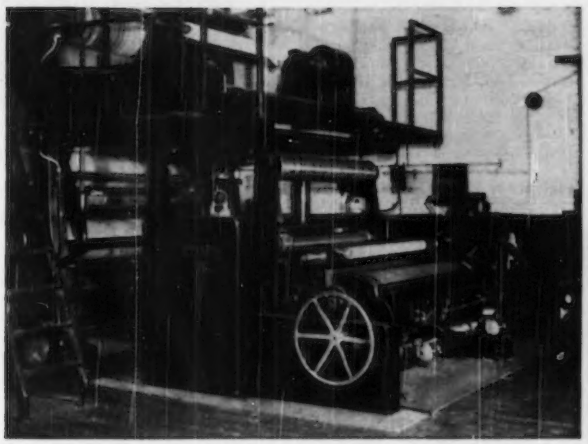
NEW YORK — A training film entitled "Safe Service" designed to show food handlers how to work with paper cups and containers has just been produced for the Paper Cup & Container Institute. The 15-minute, 16 mm. film, produced by William J. Ganz Co. costs $25, but it can be obtained for free preview from the Institute of Visual Training, 40 E. 49th street, New York 17, N.Y.

MASS. PAPER EXHIBIT

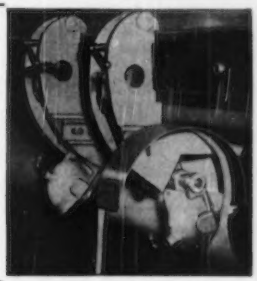
BOSTON, Mass. — Paper and allied products were chosen by the Massachusetts Development and Industrial Commission as the first major Massachusetts industry to exhibit at the Massachusetts State Building of the Eastern States Exposition, West Springfield, Mass. American Writing Paper Corp. and American Tissue Mills, both of Holyoke, were the exhibitors.

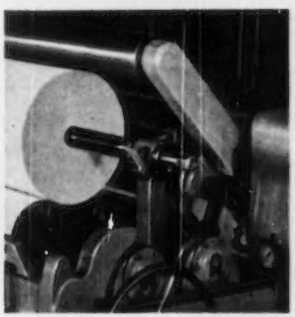
APPLETON WINDERS & REWINDERS

Check the New Features of these High-Speed Winders



Special features and engineering refinements on Appleton Winders and Rewinders provide the accuracy, control and flexibility that produce uniformly wound rolls at high speeds, clean cut and wrinkle free. The unique automatic swinging-arm riding roll, the pneumatically controlled slitter-knife pressure and release, the hydraulically operated roll ejector and the pneumatic parent roll coupling are representative of the many new features you'll find on these modern high-speed winders and rewinders with slitting attachments. All are described in detail in the Appleton Winder bulletin. Write for your copy today.





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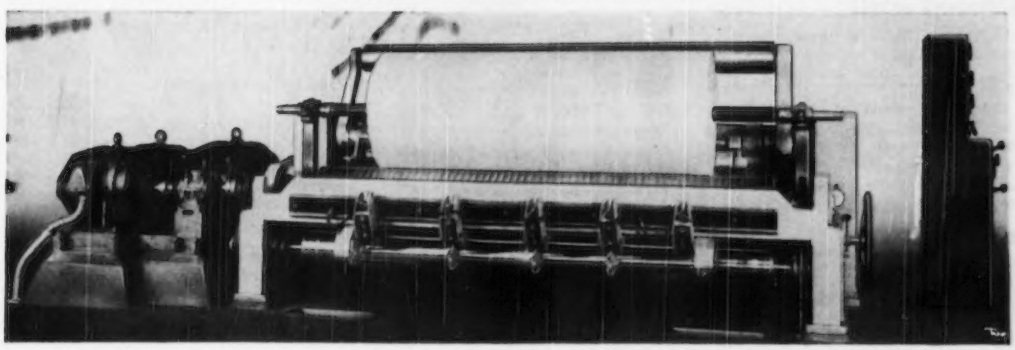


CONVERTERS

TO MANUFACTURE CAN LABELS

CHICAGO—Formation of a new division for the manufacture and sale of canned food labels was announced by the Meyercord Co., Chicago, designers and manufacturers of decalcomania transfer.

General manager of the new Label Division is E. S. McClure who has been associated with the Muirson Label Co., Inc., Peoria, for 18 years, and in charge of its Chicago regional sales office for the past 12 years.

Manufacturing will be under the supervision of John J. Klinker Jr.

SHERMAN ERECTS PLANT

CHICAGO — The Sherman Paper Products Co. has broken ground for construction of its new $300,000 plant here. It will be a one-story building and have an area of 53,312 square feet. A battery of corrugators will be installed for the manufacture of packing, packaging, baking and display materials in corrugated form.

DILLARD PAPER CO. CHARTERED

MACON, Ga. — Charter has been issued to the Dillard Paper Co. of Macon, Inc., which is authorized to do business as a manufacturer, producer, buyer and seller of various paper products. S. S. Dillard, of Greensboro, N. C.; J. L. Griffin, of Greenville, S. C.; and Albert J. Harris, Jr., of Ridge avenue, Macon, were listed as the incorporators.

CENTRAL PAPER TRANSFER

KANSAS CITY, Mo.—The business of the Central Paper Box Co., founded by the late Thomas L. Cockrell more than 30 years ago, has been transferred to a new corporation, the Kansas City Central Paper Box Co. The business has been operated by executors since Mr. Cockrell's death in 1945 and the transfer was sanctioned by the probate court.

Herman M. Langworthy, one of the trustees under the Cockrill will, has been named president. N. S. House, general manager, will continue, with the added title of vice-president.

MURNANE MOVES

CHICAGO, Ill. — Murnane Paper Co. has announced it plans to move to a new $200,000 plant in Chicago about November 1.

The firm presently is housed in a four-story building in Chicago and is making the move primarily to attain one story operations. Murnane makes all kinds of paper products, including partitions and supplies for job printers.

BRUNING TO BUILD

NEW YORK — Charles Bruning Co. announce that they are building a million dollar plant at Teterboro, N. J., Industrial Terminal, for the manufacture of sensitized papers.

FIRE AT NORTHERN FIBRE

ZEELAND, Mich. — The Northern Fibre Products Corp. plant was destroyed by fire September 28 when the blowtorch being used to lay tile in the office floor, proved faulty. Plant manager is Atlee Berger; firm president is Richard Ambrose, Detroit. No estimate was made of the damage.

RISTEEN WITH EASTERN TABLET

ALBANY, N. Y.—Richard N. Risteen, formerly of Standard Brands, Inc., has been named General Sales Manager of the Eastern Tablet Corp., Albany, N.Y., according to an announcement by Raymond J. Flagg, President of the corporation.

FORM WIL-PAK PACKING

NEW YORK, N. Y.—Articles of incorporation were filed with the office of the secretary of state, Albany, for Wil-Pak Packing Products Inc., paper and packaging business. Capital stock was listed at 200 shares no par value. Directors: Julius Kahn, Celia C. Wippman and Virginia Rockiter, whose addresses are 36 W. 44th street, New York City.

NEW H. & D. BOX PLANT

OTTAWA—A new paper box factory is to be constructed west of Toronto by the Hinde & Dauch Paper Co., of Canada Ltd. The cost of the project is estimated at approximately $3 million.

The new plant will contain about 260,000 sq. ft. of floor space and will require 350 employees when full production is reached.

ADAM CARTONS INCORPORATES

NEW YORK—Articles of incorporation were filed with the office of the secretary of state, Albany, for Adam Cartons, Inc., boxes, chests, cartons, etc. Capital stock was listed at 100 shares no par value. Directors are Herbert Friedman, Ethel Schwebel and Edith Hammerschlag, whose addresses are 384 E. 149th street, New York City.

TO MANAGE DALLAS DIVISION

SPRINGFIELD, Mass.—Everet M. Anderson, chief clerk of the United States Envelope Co.'s sales department, has been appointed manager of the company's new Southwest Division in Dallas, Texas.

Announcing the appointment, E. V. Johnson, president, said operations at the Dallas plant, now being constructed, will begin in December.

Mr. Anderson has been at the company office here since the end of World War II. Before promotion to the sales department early this year, he was accountant in charge of cost work. He began his employment with the company prior to the war at the Hill Division, Worcester.

MERCHANTS

J. S. HOUSTON

HOUSTON REPRESENTS CHIPPEWA

CHICAGO, Ill.—J. Stanlen Houston is the new Southeastern representative for Chippewa Paper Products Co., Inc. of Chicago. His territory will cover Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee and Alabama.

Mr. Houston has had more than 12 years experience in the packaging field. He has worked throughout the East and South and is well known to paper distributors in this area.

MAYER MYERS TO MOVE

MEMPHIS, Tenn.—United Construction Co. has begun construction of a new home for the Mayer Myers Paper Co. on Latham street.

Designed by Tom A. Windrom of Northern & Windrom, the new building will contain some 50,000 square feet of space with rail facilities for four freight cars at the rear and truck docking facilities for six trucks to the south side of the building. There will also be a large parking area for customers and employes.

TO SELL EACH OTHER'S LINES

NEW YORK—The association of the Stevens-Nelson Paper Corp. and the Hobson Miller Paper Co., Inc., has been announced by the presidents of the two companies. Stevens-Nelson is well known for de luxe papers and imported lines and Hobson Miller represents twenty paper mills.

Each corporation will maintain separate identities and all offices will be maintained. The presidents of the two companies said that the association was a natural step, as the basic business policies were identical and their lines complemented each other. The sales forces of both will sell the lines of both concerns.

JOINS BENNETT PAPER CO.

Irving Bennett has become associated as a partner with his brother, Jack Bennett, in the Bennett Paper Co.

So Soft...So Clean...So White

with a Big assist from ***Titanox***

◆ Facial tissues—modern cellulose counterpart of the old-fashioned handkerchief—supply an ever-growing answer to hundreds of intimate tasks.
Contributing much to the rapid public acceptance of tissues has been the ability of TITANOX pigments to impart sales-impelling appearance to these products. For example, just a little TITANOX-A-WD added to the beater significantly boosts the whiteness and opacity of facial tissues, without adversely affecting the softness of the cellulose fibers.

Our Technical Service Department is ready at all times to help you with your problems in pigmenting all types of paper. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 South Michigan Avenue, Chicago 3, Ill.; 2600 South Eastern Avenue, Los Angeles 22, Calif. Branches in all other principal cities.

® **TITANOX**
the brightest name in pigments

TITANIUM PIGMENT CORPORATION
Subsidiary of NATIONAL LEAD COMPANY

SCHLEICHER NAMED CHAIRMAN

ST. LOUIS, Mo.—Allen K. Schleicher, treasurer of F. J. Schleicher Paper Box Co., has been named chairman of the welcoming committee for a meeting of the western division, National Paper Box Manufacturers, at the Jefferson Hotel here, October 20.

TO REPRESENT BEVERIDGE

INDIANAPOLIS, Ind. — The Beveridge Paper Co., will be represented in Chicago at the National Paper Trade Assn. meeting at the Stevens Hotel the week of October 22 by W. J. Blackley, president, and C. F. Munroe, secretary. Both Mr. Blackley and Mr. Munroe will be registered at the Stevens.

JAP DOWNARD RETIRES

LOUISVILLE, Ky. — J. H. ("Jap") Downard has retired after 43 years with the Louisville Paper Co. He rose from sample clerk and collector to manager of the wrapping-paper division and a member of the board of directors.

Mr. Downard is a former vice-president of the Middle States Paper Assn., and is a charter member of the National Paper & Twine Assn.

SUPPLIERS

ALLIS-CHALMERS RUMLEY LTD., a Canadian subsidiary of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced the purchase of the plant of the Erie Iron Works at St. Thomas, Ontario, and also the purchase from the city of an additional seven acres of land. Allis-Chalmers will take possession of the new site October 9. By the first of the year, the company hopes to install machine tools for manufacturing operations. Until that time, however, assembly operations will be carried out.

APPLETON WOOLEN MILLS of Appleton, Wis., manufacturers of woolen paper machine felts, announce a change in territory effecting that covered by Lou Everlien. Previously, Mr. Everlien serviced the Central Mid-West and Central East. Under the new plan, he will cover the states of New York, Pennsylvania, New Jersey, Delaware, Maryland and the Virginias.

FOSTER WHEELER CORP., has appointed E. F. Wentworth, Jr., head of its legal department, with the title of General Attorney. Mr. Wentworth has been with Foster Wheeler since April 1941, and for twelve years prior thereto was engaged in general and patent law practice in New York City and Newark, N. J.

EUGENE WARD

Eugene Ward has been appointed general sales manager of Cameron Machine Co., Brooklyn, N. Y. Mr. Ward has been associated with Cameron for thirteen years. He was assistant service manager from 1945 to 1948 at which time he was made manager of that department. In February of this year he was appointed assistant sales manager. The company president, P. J. Lathrop, has been functioning as sales manager in the interim.

B. F. GOODRICH CHEMICAL CO.'S NEW YORK SALES OFFICE has moved into new and spacious facilities in the Farmers Loan and Trust Co. Bldg., 475 Fifth Avenue. Occupancy of the entire 24th floor will provide additional offices and conference rooms. The offices have been located in smaller quarters in the same building since 1949.

KINSLEY CHEMICAL CO., Cleveland, Ohio, announce that Peter J. Kern has joined their Technical and Research Department. He will be assistant to E. R. Timlowski, technical director, in the operation of the company's new pilot plant for fibre research."

PENNSYLVANIA SALT MFG. CO. has appointed John H. Baker general superintendent of Pennsalt of Washington's western manufacturing operations. The company's operations in the West comprise plants at Tacoma, Wash., Portland, Ore., and Bryan, Texas.

Mr. Baker has been superintendent of the Tacoma, Wash., plant since 1928, when Pennsalt incorporated the Tacoma Electrochemical Co. He began his career in the chemical industry in 1916 when he became general foreman of the Michigan Electrochemical Co.'s plant in Menominee, Mich. He later became superintendent of that plant, a position he held until transferred to Tacoma. Pennsalt acquired Michigan Electrochemical in 1924 and in 1932 moved operations from Menominee to its Wyandotte, Mich., plant.

REICHHOLD CHEMICALS, INC. has elected Harry Kline, Detroit, manager and technical director of the Phenolic Plastics Division, and T. S. Hodgins, Seattle, manager of RCI's Pacific Northwest Division, vice-presidents of the company, in charge of their respective divisions.

P. L. Swisher, Detroit, vice-president in charge of sales and advertising, and M. W. Reece, South San Francisco, vice-president in charge of Pacific Coast operations, have been elected to the company's board of directors.

STANDARD OIL CO. of Ohio have completed two new buildings at Lima, Ohio. H. K. Ferguson Co., were the engineers and builders. The structures consist of a two-story office and laboratory and a single story maintenance building.

THE WESTINGHOUSE EDUCATIONAL CENTER—a non-profit corporation organized to offer to employes of Westinghouse and their families opportunities for further educational and cultural development—was recently opened.

ALKALI STRIKE SETTLED

PAINESVILLE, Ohio—Diamond Alkali Co. workers started to return to work on September 27 following settlement of a 66-day strike called by District 50 of the United Mine Workers.

Settlement of the Diamond strike follows earlier agreements which reopened the Detroit plant of Wyandotte Chemical and the Solvay Process plant at Syracuse, and promises further easing of the acute shortages in soda ash, caustic soda and other important chemicals.

Terms of the new three-year labor agreement include a 10c an hour wage boost with additional wage increases of 5c an hour in 1951 and 1952. Employes of the Standard Chromate division are to receive an additional 5c an hour.

The company estimates cost of the new agreement at about $3,750,000 over the three-year life of the contract, including $1 million the first year, $1,250,000 the second year and $1,500,000 the third year. The contract also provides protection against higher living costs, at rate of 1c an hour for each point advance in the Government index.

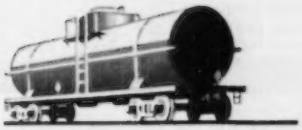
In addition, broadened insurance and hospitalization benefits as well as liberalized vacations also are included in the contract.

The company hopes to make initial substantial shipments of its major chemicals this week with full production expected in about two weeks. Early production is to be allocated among customers.

N. C. EARNINGS REPORT

RALEIGH, N. C.—The Department of North Carolina reported that the average weekly earnings in the Pulp and Paperboard mills of that state for July amounted to $78.19, an increase of 9.2 per cent over the previous month. This figure was the highest among all the industries reporting in the state.

soda bleach savings with Wyandotte liquid caustic soda



1 Handling costs are reduced because less labor is required in unloading, storing and using *liquid* caustic.

2 Soda bleach foams less in the washers than other bleaching chemicals. Pulp draining and drying are faster, more economical.

3 Soda bleach made with Wyandotte Caustic Soda insures a cleaner finished paper with a minimum reversion of brightness.

These are some of the money-saving advantages Wyandotte Liquid Caustic Soda provides in the bleaching of wood, rag, straw and waste paper pulps.

Wyandotte's skilled Technical Service staff will be glad to help you search out economies in bleaching and other operations, as they concern your particular requirements. For information, simply contact your nearest Wyandotte Representative, or write direct to:

Wyandotte Chemicals Corporation

Wyandotte, Mich. • Offices in Principal Cities

SODA ASH • CAUSTIC SODA
BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE
CHLORINE • HYDROGEN • DRY ICE
SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE
PROPYLENE DICHLORIDE
AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

Wyandotte
REG. U. S. PAT. OFF.

FINANCIAL RECORD

	Per Share Earnings			
	Calendar Year 1949	12 Mo. to Approx. 6/30/50	Indic. Annual Divid. Rate	Oct. 11 Approx. Market Price
PREFERRED STOCKS				
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.14	$3.75	$101¾
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.14	4.00	114½
Celotex Corp. 5% Cum.	6.80c	8.75	1.00	16½
Champion Paper & Fibre $4.50 Cum.	60.09f	89.39	4.50	105¼
Container Corp. of Amer. 4% Cum.	89.52	104.60	4.00	104⅜
Crown Zellerbach $4.00 Cum.	54.38c	61.85	4.20	126¾
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	12.24	2.50	52⅜
Flintkote Co. $4 Cum.	62.70	71.81	4.00	105
Robert Gair Co., Inc. 6% Cum.	13.79†	15.86†	1.20	18¼
International Paper Co. $4 Cum.	224.55	264.19	4.00	106½
Kimberly Clark Corp. 4% Cum.	85.27	117.03i	4.50	105¼
MacAndrews & Forbes 6% Cum.	61.59	62.97	6.00	142¾
Mead Corp. 4¼% Cum.	51.37	82.87a	4.25	91⅝
Mead Corp. 2% Cum. Conv. 2nd	21.35*	27.76a	2.00	62½
Paraffine Cos. Inc. 4% Cum. Conv.	56.46	59.81	4.00	98
Rayonier Inc. $2 Cum.	9.54	12.09	2.00	34⅜
St. Regis Paper Co. 4.40% 1st A	30.74	36.61	4.40	95⅜
Scott Paper Co. $3.40 Cum.	51.15*	62.16*	3.40	98½
Scott Paper Co. $4.00 Cum.	51.15*	62.16*	4.00	106¼
Sutherland Paper 4¼% Conv.	46.92	59.24	4.25	114⅝
U. S. Gypsum Co. 7% Cum.	283.37	340.24	7.00	182⅞
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)15.98	2.00	23⅜
West Virginia Pulp & Paper 4½% Cum.	61.28c	61.06i	4.50	109¾
COMMON STOCKS				
APW Products Co.	(d)0.81	(d)0.01	—	4⅝
American Writing Paper Corp.	.04	0.50	—	7⅜
Armstrong Cork Co.	6.57	7.84	$3.00	48¾
Celotex Corp.	1.65c	2.20	1.00	15¼
Certain-Teed Prods. Corp.	2.84	3.24	1.00	14⅞
Champion Paper & Fibre	5.15f	8.16	2.00	45¼
Congoleum Nairn Co.	3.04	2.70	2.00	24⅞
Container Corp. of America	8.46	9.62	4.00	62½
Crown Zellerbach	6.02c	6.84	2.00	42⅜
Dixie Cup Co.	7.44	8.58	1.50	44¾
Eastern Corp.	0.04	1.64	(h)	19¼
Flintkote Co.	4.33	4.95	2.50	26¼
Robert Gair Co., Inc.	2.11†	2.30†	0.70	10⅝
Great Northern Paper Co.	4.87	3.75	2.80	43¾
International Paper Co.	7.12	8.14	2.50	44⅝
Johns-Manville Corp.	4.83	6.16	2.50	44¼
Kimberly Clark Corp.	5.29	6.66i	1.80	42½
MacAndrews & Forbes Co.	3.64	3.77	3.00	38⅝
Marathon Corp.	3.29c	4.13i	1.40	34¾
Mead Corp.	4.10	5.57a	1.60	31⅛
National Container Corp.	0.95	1.34	0.60	10⅜
Paraffine Cos. Inc.	0.85	0.90	0.60	17⅝
Rayonier, Inc.	4.75	6.36e	2.50	41⅞
Ruberoid Co.	8.72	9.06	3.25	51¾
St. Regis Paper Co.	0.91	1.11	0.60	10¼
Scott Paper Co.	6.07	7.38	3.60	41
Sutherland Paper Co.	4.62	5.64	2.75	43¼
Union Bag & Paper Corp.	5.01	5.16	2.50	35⅛
United Board & Carton	(d)1.61b	0.58j	—	16
U. S. Gypsum Co.	13.51	16.29	9.00	115
United Wallpaper	(d)0.01	(d)0.55	—	3
West Virginia Pulp & Paper	8.58c	8.36i	5.00	65⅛

(a) 12 months to approximately 6/15/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 3/30/50
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(h) Declared 25c payable Sept. 1, 1950.
(i) 12 months to 7/31/50
(j) 12 months to 5/31/50.
(*) Earnings per combined preferred shares.
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

British Columbia Pulp & Paper Co., Ltd., announced it will clear up the dividend arrears on its preferred stock by two payments of $28 each. The first payment will be made November 1 to stockholders of record October 16, and the second will be made February 1 to stockholders of record January 15.

The company also declared a quarterly dividend of $1.75 on the preferred stock, payable November 1 to stockholders of record October 16.

Brown Co. and its subsidiary, had consolidated net sales of $37,678,064 and net profit of $2,923,316, for the forty weeks ended September 2, 1950, compared with sales of $32,440,431 and net earnings of $768,154 and net earnings of $768,154 in the same period last year.

River Raisin Paper Co. has declared a dividend of 15 cents a common share, payable October 20 to stockholders record of October 5.

Crown Zellerbach Corp. has called for redemption on November 1, 1950, all outstanding shares of $4 dividend cumulative convertible second preferred stock, at $102.50 plus accumulated dividends. Of the 176,552 shares of this stock issued at the time of reorganization in 1945, all but 18,109 shares have been converted into common.

Outstanding shares of the second preferred still may be converted at the rate of three shares of common for each share of second preferred, until October 27, 1950. After that, shares not converted will be entitled to receive only the redemption price and any dividends which may have accrued to November 1.

The company currently is paying dividends at the rate of $2 a share on its common.

United Board & Carton Corporation reports consolidated profit of the corporation and its subsidiaries for the twelve weeks period ended August 19, 1950, after depreciation but before provision for Federal Income Tax, amounted to $102,541.56. These figures are subject to audit and year-end adjustments. Net profit after provision for Federal Income Tax amounted to $63,277.81.

For the corresponding twelve weeks of last year, ending August 20, 1949, the corporation showed $31,569.77 before taxes, and net profit after provision for Federal Income Taxes of $21,997.17.

INCREASED EXPENDITURES

WASHINGTON, D. C.—Capital expenditures for American business have again been revised upward for the year since the outbreak of the Korean war, the Commerce Department reports.

Plant and equipment expenditures for the second half of 1950 are expected to amount to $9.8 billion for the second half of this year, compared with $9 billion in the same months of 1949, in contrast to the decline reported in the first part of the year to around $8 billion. Planned capital outlays for the full 1950 year are now placed at $17.9 billion, compared with $16.1 billion originally planned this year, according to a survey conducted jointly by the department and the SEC.

Larger expenditures by manufacturing companies for the last half of this year account for practically the entire anticipated increase in outlays since the second half of 1949, it was reported.

INCREASED PAPER DIVIDENDS

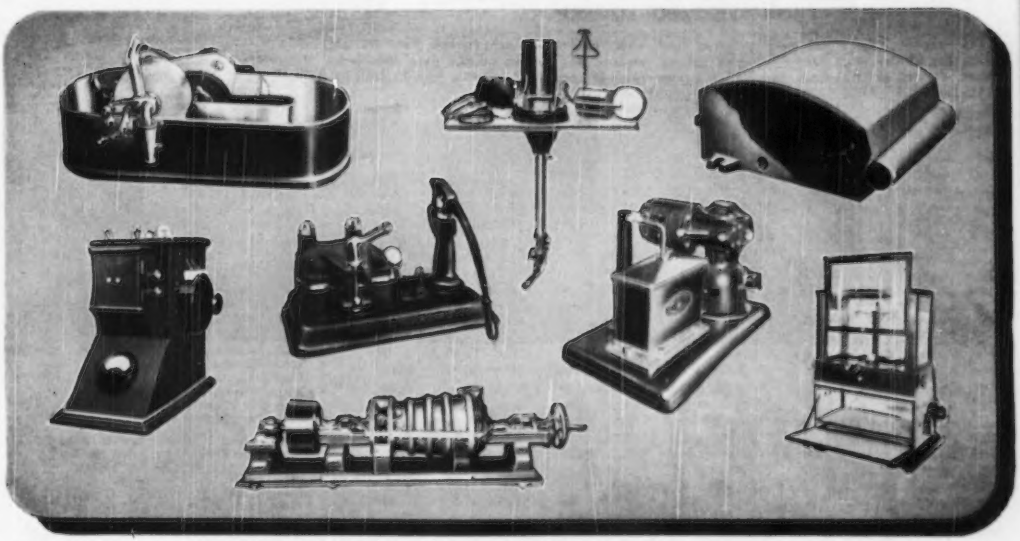
WASHINGTON, D. C.—Publicly reported dividend payments by the combined paper and printing industries rose to $6,100,000 in August, 1950, from $4,900,000 a year earlier, the Commerce Department reported this week.

"The Best I've Ever Used"

"IT *ought* to be the best! Valley pioneered the miniature beater and sheetmaking equipment thirty years ago, and have been improving it ever since. All of our mills use Valley Laboratory Equipment, and we get very accurate check results."

Write for a copy of Valley's NEW Laboratory Equipment Catalog. It contains new facts, new advisory information.

VALLEY IRON WORKS CO.
Appleton, Wisconsin



VALLEY *Laboratory Equipment*

PRICES

The prices below reflect market quotations at the mill level on standard grades. Most orders accepted however, at price prevailing on date of shipment. Does not include spot offerings.

NEW YORK
Delivered Ports

Standard News, per ton—

Rolls, contract	$100.00/	—
Sheets	115.00/	—

F.o.b. Mills, C.l. Frt. allowed, dock, N. Y.

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls	$7.00/$7.25
No. 1 Wrapping Rolls	7.75/ 8.00
Standard Bag	6.75/ 7.00

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs. or more

Wh. No. 1 Frd	$1.60	/ —
Wh. No. 1 MG	1.60	/ —
Wh. No. 1½	1.55	/ —
Wh. No. 2	1.45	/ —
Kraft Non-Tar		
White Non-Tar		

Toilet— per case of 100 rolls—1 M sheets

Unbleached 4½x4½	$5.90/ —
Unbleached 4½x5	5.85/ —
Bleached 4½x4½	7.10/ —
Bleached 4½x5	8.80/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$5.90/$6.25
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½ x 5, 2 ply	$8.95/$9.45

Paper Towels—per case of 3750.

Wh. Jr. M'tif'd 9¼x9½	$5.65
Br. Sr. M'tif'd 10x12	4.00
Br. Jr. M'tif'd 9½x9¾	3.50
Br. Jr. Sgl. fold 10x10¾	3.35
Blchd. 7½ x 11, 24/25 rolls	$3.95/$6.25

Manila, per cwt.

No. 1 Jute Tag sheets*	$15.55/$17.55
Reg. Jute M.F. 40 lb., sheets*	14.00/ 16.00
Wrapping Manila	8.75/ 10.50
Printing Manila	10.00/ 11.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS
Fourth Quarter Contract Prices, Per Short Air-Dry Ton
Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$75.00/ —	$70.00/ 75.00	†$82.50/ —		
Sideruns Pulping News	70.00/ —	70.00/ 75.00			
Soda, Bleached	130.00/ —	130.00/ —			
Sulphate, Bleached	128.00/167.50	141.00/ —	*165.00/167.50		Competitive
Sulphate, Unbl'd North'n		110.00/120.00	*135.00/165.00		
Sulphate, Unbl'd South'n	110.00/160.00				
Sulphite Blchd. (S'ftw'd)	128.00/145.00	135.00/138.00	*160.00/ —		Competitive
Sulphite, Blchd. (H'dw'd)	145.00/ —				
Sulfite, Semi-blchd.	128.00/ —				
Sulphite, Unbleached		117.00/120.00	*138.00/165.00		
Sulphite, Unbl'd (Glassine)		121.00/ —	*142.00/150.00		

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more.

90-lb. 375 ft. GSI	$6.60/ —
60-lb. 600 ft. GSI	6.60/ —
35-lb. 800 ft. GSI	7.59/ —
35-lb. 500 ft. GSO	5.70/ —

Boards, per ton—

Filled News	‡ $97.50/ —
Plain Chip	90.00/ 95.00
Blchd. Mla. Ld. Chip	‡ 120.00/ —
White Pat. coated .020	‡ 140.00/ —
Kraft Liners 42 lb.	105.00/ —
Kraft Corr. .009	110.00/ —
Binders Boards	135.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns. per cwt.
100% Rag Ex. No. 1	‡ $64.35/$69.60
100% Rag	56.95/ —
75% Rag	43.70/ —
50% Rag	35.60/ —
25% Rag	29.75/ —

Ledgers	4 Ctns. per cwt.
100% Rag Ex. No. 1	‡ $65.15/$66.35
100% Rag	‡ 58.20/ 58.25
75% Rag	‡ 44.95/ 46.20
50% Rag	‡ 36.90/ 36.95
25% Rag	‡ 31.00/ 31.05

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns. per cwt.
Watermarked	‡ $18.15/$19.05
Plain	17.10/ 17.45

Ledgers	4 Ctns. per cwt.
Watermarked	‡ $19.50/$20.30
Plain	18.55/ 18.75

White Book

Conversion Coated	Case per cwt.
No. 1	$21.65/$21.75
No. 2	20.15/ 20.40
No. 3	19.65/ —
Machine Coated	
No. 1	$16.90/ 17.15
No. 2	14.90/ 15.15
Uncoated	
No. 1 Antique (Watermarked)	$17.15/ 18.65
Offset	16.15/ 16.90
A Grade E. F.	16.15/ —
A Grade S. C.	16.65/ 16.90
B Grade E. F.	15.40/ —
B Grade S. C.	16.15/ —

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) ALL PRICES NOMINAL. SPOT OFFERINGS OR SPECIAL PACKINGS NOT INCLUDED.

	New York Oct. 3	Philadelphia Sept. 8	Boston Oct. 3	Chicago Oct. 2
No. 1 Mixed Paper	$23.00/ 27.00	$18.00/ 20.00	$19.00/ 20.00	$22.00/ —
Boxboard Cuts	23.00/ 25.00	18.00/ 20.00	19.00/ —	26.00/ —
Mill Wrappers	22.00/ 29.00	25.00/ 30.00	24.00/ 29.00	24.00/ —
No. 1 News	26.00/ 30.00	21.00/ 23.00	24.00/ —	25.00/ —
Over-issue News	29.00/ 32.00	24.00/ 28.00	25.00/ 27.00	28.00/ —
Corrugated Containers	35.00/ 37.00	32.00/ 36.00	33.00/ 35.00	35.00/ —
New Corrugated Cuts	40.00/ 45.00	35.00/ 40.00	35.00/ 40.00	45.00/ —
Double Kraft Ld. Corr. Cuts	75.00/ 80.00	55.00/ 58.00	70.00/ 80.00	77.50/ —*
100% Kraft Corr. Cuts	85.00/ 90.00	— / —	— / —	— / —
Used Kraft Bags	50.00/ 60.00	55.00/ 58.00	50.00/ —	55.00/ —
No. 1 Brown Kraft Paper	50.00/ 60.00	45.00/ 50.00	50.00/ 60.00	55.00/ —
Super Resorted Br. Kraft	62.50/ 70.00	55.00/ 60.00	65.00/ 70.00	65.00/ —
New Br. Kraft Env. Cuts	105.00/115.00	80.00/ 90.00	110.00/115.00	90.00/ —
New Br. Kraft Cuts	70.00/ 80.00	75.00/ 80.00	85.00/ 90.00	85.00/ —
No. 1 Gdwd Shvs.	50.00/ 55.00	35.00/ 45.00	60.00/ —	40.00/ —
White Newsblanks	80.00/ 85.00	65.00/ 75.00	80.00/ —	70.00/ —
No. 1 Flyleaf Shvs.	60.00/ 75.00	45.00/ 50.00	65.00/ 75.00	80.00/ —
No. 1 Soft Wht. Shvs.	150.00/160.00	110.00/125.00	110.00/115.00	125.00/ —
Super Soft Wht. Shvs.	160.00/170.00	120.00/130.00	115.00/125.00	135.00/ —
Hd. Wht. Shvs.	160.00/170.00	130.00/150.00	125.00/140.00	140.00/ —
Hd. Wht. Env. Cuts	175.00/ —	140.00/170.00	140.00/170.00	150.00/ —
New Manila Env. Cuts	100.00/120.00	80.00/ 90.00	90.00/100.00	90.00/ —
Col. Tab Cards	65.00/ 80.00	55.00/ 70.00	55.00/ 60.00	70.00/ —
Manila Tab Cards	110.00/120.00	95.00/120.00	100.00/110.00	110.00/ —
No. 1 Mixed Ledger	60.00/ 70.00	55.00/ 60.00	60.00/ —	70.00/ —
White Ledger	90.00/100.00	75.00/ 80.00	70.00/ 80.00	100.00/ —
No. 1 Book & Mag.†	32.00/ 33.00	30.00/ 35.00	30.00/ 35.00	28.00/ —
No. 1 Rep'd. Hvy. Books‡	45.00/ 50.00	40.00/ 45.00	40.00/ 50.00	45.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

Rag Market
New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)
ALL PRICES NOMINAL

White Shirt	$15.00/$16.00
Unbleached Muslin	14.00/ 15.00
Light Silesias	8.50/ 9.50
White Black Blue Overalls	9.50/ 10.50
Blue Overalls	5.00/ 5.25
Fancy Shirt	5.50/ 6.00
Percales	7.00/ 8.00
Light Prints	7.00/ 8.00
No. 1 Washables	4.50/ 4.75
Bleachable Khaki	8.00/ —
Unbleachable Khaki	5.50/ —
Cottonades	4.50/ 5.00
Lt. Flannelettes	8.50/ 9.00
Men's Corduroy	4.50/ 5.00
Women's Corduroy	4.50/ 5.00
Canton Flannels, Blchd.	13.00/ —
Underwear Cutters, Blchd.	14.00/ 15.00
Underwear Cutters, Unblchd.	13.00/ 14.00

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)
ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$4.25/$4.75
Cotton Pants & Overalls	3.50/ 4.00
Thirds and Blues, Repacked	3.25/ 3.50
No. 1 Roofing Rags	2.25/ 2.50
No. 2 Roofing Rags	1.90/ 2.00
No. 3 & 4 Roofing Rags	1.75/ 1.85
Roofing Bagging	1.75/ 1.85

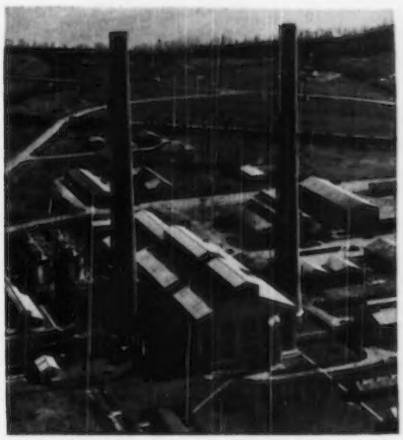
New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$4.25/$4.75
New Mixed Cuttings	4.50/ 5.00
Light Silesias	7.50/ 8.00

SULPHUR

*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*MINING



The process of mining sulphur, as developed by Herman Frasch, takes advantage of the fairly low melting point of sulphur (about 240° Fahrenheit). The process resolves itself into three parts: one, operating a power plant that heats and pumps to the field large quantities of water; two, distributing the hot water through wells to melt the underground sulphur, and raising the melted sulphur to the surface; three, cooling and solidifying the sulphur in large vats from which it is broken and loaded into cars for shipment.

The power plant and water reservoir, as well as the vats and permanent structures, are placed at some distance from the sulphur deposit to avoid possibility of damage from surface subsidence, resulting from extraction of the underground sulphur.

Loading operations at one of the huge vats of Sulphur at our Newgulf, Texas mine. Such mountains of Sulphur are constantly being built at our mines, from which shipments are continually made.

TEXAS GULF SULPHUR CO.
INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal
Fancy Shirt Cuttings	6.00/ 7.00
Light Prints	6.00/ 7.00
Bleachable Khaki, No. 1	5.50/ 6.00
Unbl. Khaki, No. 1	4.50/ 5.00

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	$6.50/$7.50
No. 2 White Cottons	5.50/ 6.00
No. 3 White Cottons	4.00/ 4.50
No. 4 White Cottons	3.50/ 3.75
Extra Light Prints	4.50/ 5.00
Old Light Prints	4.00/ 4.25
Med. Light Prints	3.50/ 3.75
Dutch Blue Cottons	3.75/ 4.00
Checks and Blue	3.00/ 3.50
Linsey Garments	2.75/ 3.00
Dark Cottons, European	2.25/ 2.50
Dark Cottons, Egyptian	2.15/ 2.30
Old Shopperies	2.10/ 2.25
New Shopperies	2.25/ 2.50

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$6.25/$6.50
Domestic Gunny, No. 1	6.50/ 7.00
Heavy Wool Tares	6.00/ 6.50
Foreign Manila Rope	5.25/ 5.50
Domestic Manila Rope	5.25/ 5.50
Jute Strings	5.50/ 5.75
No. 1 Sisal Strings	3.00/ 4.00
Mixed Strings	nominal
Paper Mill Tares	3.00/ 3.50
No. 1 Scrap Burlap	
Foreign	4.50/ 5.00
Domestic	5.50/ 6.00
Austr. Wool Pouches	6.50/ 7.00
New Burlap Cuttings	7.00/ 7.50

MATERIALS

Aluminum, sulfate:		
coml. bags, wks. cwt.	1.65	
iron-free c.l.	2.75	
Alcohol, ethyl:		
tax free, dms. c.l. gal.	.62	/ .97
dedl. East Miss.		
Casein, acid-prec.:		
dom. sh. pt. c.l. lb.	.37	/ .39½
imp. ex dock lb.	.35½/	.36½
Caustic soda:		
c.l. wks. solid, 76%, cwt.	3.35	
flak. & grd. 100-lb. drums	3.75	
liquid 50% tanks	2.55	
liquid 70% tanks	2.65	
China clay:		
dom. air-float. filler, c.l. wks. ton	10.00	
water-washed	11.00	
coating	16.00	/30.00
imported, ex whse. short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works cwt.	2.70	
multi-unit cwt.	3.20	/ 4.40
Formaldehyde:		
USP, inh. dms. c.l. wks. lb.	.0600/	.0625
l.c.l. E. wks.	.0650/	.0675
Fuel oil:		
Bunker C, No. 6 Cal. hvy tanks, refinery bbl.	1.40	/ 1.60
light bbl.	2.05	/ 2.10
Hydrogen peroxide:		
USP, 35% chys. E. of Miss. lb.	.24½/	.25½
Lime:		
hydrated, bags, wks. Buffalo ton	13.50	
Rosin:		
B gum, drms, c.l. Savan. cwt.	4.10	
G, do. cwt.	6.60	
H cwt.	7.08	
I, K cwt.	7.20	
FF wood, do. cwt.	5.00	
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt. cwt.	6.25	/ 6.45
Salt cake.		
dom. bulk, c.l. wks. ton	17.00	
wks. frt. all. ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks.	1.50	
bulk cwt.	1.20	
Sodium silicate 40°:		
turbid, c.l. wks. cwt.	1.20	
l.c.l. wks.	1.55	/ 1.95
Sodium peroxide:		
dms. c.l. E. of Miss. lb.	.19	
l.c.l. do. lb.	.19½/	.20
Soybean, protein:		
chem. isol, wks. c.l. lb.	.24	/ —
Cinn. and Chic.		
Sulfuric acid:		
60° Be. chys. c.l. cwt.	1.40	
E. wks.		
l.c.l. cwt.	1.80	/ 2.50
Sulfur:		
crude, c.l. mines, contract, long ton	18.00	/22.00
f.o.b. vessels Gulf	19.50	/23.50
Export, f.o.b. Gulf	22.00	/25.00
Sulfur dioxide:		
liquid, coml. cyl. wks. lb.	.09	
multi-unit cars lb.	.0535	
Starches:		
pearl corn, bags, c.l. Chic. cwt.	5.47	/ —
white dextrines, c.l. Chic. cwt.	6.74	/ —
potato, Idaho, c.l. wks. cwt.	5.00	/ —
potato, Maine, c.l. wks. cwt.	5.00	/ —
tapioca, conv. dextrines cwt.	6.75	/ 7.25
medium grds. Gulf and East Coast ports	5.50	/ 6.25
low, Siam, on dock N. Y.	4.75	/ 5.25
Talc:		
domestic, 50-lb. sacks, c.l. wks. ton	25.00	/30.00
Titanium dioxide:		
anastase, c.l. deld., bags lb.	.19½	
l.c.l. deld. lb.	.20	/ .20½
rutile, c.l. deld. lb.	.21½	
l.c.l. deld. lb.	.22½	

N.B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Newsprint

Week Ending Oct. 7

R. A. Olsen, A. C. D., Donnacona, 330 rolls.
News Syndicate Co., Elin Hope, Baie Comeau, 7819 rolls.
R. A. Olsen, G.T.D., Donnacona, 330 rolls.
N. Y. Herald Tribune, Fort Avalon, Cornerbrook, 777 rolls.
Wall Street Journal, Fort Avalon, Cornerbrook, 74 rolls.
Bato Co., Fort Avalon, Cornerbrook, 367 rolls.
Castle & Overton, Inc., Fort Avalon, Cornerbrook, 240 rolls (sideruns).
Philadelphia Inquirer (Philadelphia, Pa.), Fort Avalon, Cornerbrook, 830 rolls.
Evening Bulletin, (Philadelphia, Pa.), Fort Avalon, Cornerbrook, 1665 rolls.
R. A. Olsen, Kermic, Donnacona, 363 rolls.
Montmorency Paper Co., Hellas, Botwood, 10,059 rolls.
R. A. Olsen, Donpaco, Donnacona, 346 rolls.
News Syndicate Co., Tidaholm, Dalhousie, 6696 rolls.
H. C. Craig, Newscarrier, Donnacona, 331 rolls.
News Day, Vinland, Port Alfred, 352 rolls.
N. Y. Herald Tribune, Vinland, Port Alfred, 1351 rolls.
National Pulp & Paper Co., Inc., Vinland, Port Alfred, 140 rolls.
Long Island Daily Press Publishing Co., Inc., Vinland, Port Alfred, 1792 rolls.
N. Y. Journal American, Vinland, Port Alfred, 569 rolls.
Western Printing & Lithographers, Ethel Tombs, Gatineau, 250 rolls.

Crepe Paper

Brundage Merchandise Co., American Counselor, Rotterdam, 21 cs.

Wallpaper

C. A. Haynes & Co., American Merchant, London, 49 cs, 20 bls.
Taub Hummel & Schnall, American Forwarder, Liverpool, 57 ctns, 10 pkgs.
C. A. Haynes & Co., American Forwarder, Liverpool, 527 ctns.
W.H.S. Lloyd & Co., Hurricane, Yokohama, 20 cs. (grasscloth).
Taub Hummel & Schnall, Media, Liverpool, 87 ctns.
C. A. Haynes & Co., Media, Liverpool, 22 ctns.

Velox Paper

Tide Mercantile Corp., Havorn, Bremen, 25 cs.

Surface Coated Paper

Gevaert Co. of America, Tervate, Antwerp, 14 cs.

Type Paper

Tide Mercantile Corp., Havorn, Bremen, 11 cs.

Stencil Paper

Irving Trust Co., Hurricane, Kobe, 4 cs.

Paper Napkins

H. W. Robinson & Co., American Merchant, London, 5 cs.

Colored Paper

J. W. Hampton Co., Black Falcon, Antwerp, 4 cs.

Printing Paper

Chanticleer Press, Noordam, Rotterdam, 10 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Merchant, London, 23 cs.
E. H. Sargent & Co., Stockholm, Gothenburg, 7 cs.

Cigarette Paper

Columbia Tobacco Co., America, Southampton, 1 cs.

Writing Paper

Kraemer & Co., American Merchant, London, 2 cs.
R. Stone, Havorn, Hamburg, 35 cs.
H. W. Robinson & Co., Ile de France, Havre, 2 cs.
Davies Turner & Co., Ile de France, Havre, 1 cs.
All Transport, Inc., Ile de France, Havre, 2 cs.

Raw Base Paper

Auken Chemical & Film Corp., American Merchant, London, 96 rolls.

Embossed Board

Heller & Usdan, Stockholm, Gothenburg, 140 rolls.

Baryta Coated Paper

American Express Co., American Merchant, London, 47 rolls.
General Aniline & Film Corp., American Counselor, Antwerp, 1 cs.

Parchment Paper

A. H. Otto, Black Falcon, Antwerp, 1 cs.

Drawing Paper

Aero Sea Shipping Corp., American Merchant, London, 1 cs.

Cellophane Wrapping

Van Oppen & Co., Axeldyk, Rotterdam, 43 cs.

Cellophane Paper

Pulpaver Co., Noordam, Rotterdam, 25 cs.

Tissue Paper

F. P. Gaskell & Co., American Forwarder, Manchester, 2 cs.
B. F. Drakenfeld & Co., American Forwarder, Liverpool, 17 cs.

Tracing Cloth

Keuffel & Esser Co., American Forwarder, Manchester, 86 cs. (bleached cotton).

Boxboard

General Motors Overseas Operations, Stockholm, Gothenburg, 218 bdls.

Gummed Paper

B. F. Drakenfeld & Co., American Forwarder, Liverpool, 47 cs.

Carbon Paper

Lep Transport, Queen Mary, Southampton, 1 cs.

Wallboard

Elof Hansson, Inc., Stockholm, Gothenburg, 482 bls.

Wrapping Paper

The Borregaard Co., Inc., Stockholm, Gothenburg, 89 rolls.

Baryta Coated Board

E. de Vries Division, Paper Corp. of U. S., American Counselor, Antwerp, 8 cs., 14 rolls.

Paper Serviettes

(———), Media, Liverpool, 13 crates.

Miscellaneous Paper

Stevens Nelson Paper Corp., American Merchant, Hamburg, 1 cs.
F. C. Strype, Noordam, Rotterdam, 29 cs.
Mercury Paper, Inc., Axeldyk, Rotterdam, 2 cs.

Photo Paper

Alco Photo Supply Corp., Queen Mary, Southampton, 11 cs.
J. J. Gavin Co., Queen Mary, Southampton, 8 cs. (unsensitized).

Paper Towels

H. W. Robinson & Co., Caronia, Southampton, 1 cs.

Rags, Baggings, etc.

J. A. Manning Paper Co., American Merchant, London, 14 bls. newscuttings, 7 bls. cotton cuttings.
E. J. Keller Co., Inc., American Merchant, London, 41 bls. paperstock.
E. J. Lang, American Merchant, London, 73 bls. old bagging.
A. de Vries Trading Corp., Havorn, Rotterdam, 69 bls. scrap bagging.
A. W. Fenton Co., Havorn, Bremen, 35 bls. scrap bagging.
R. & V. Miller, American Forwarder, Liverpool, 31 bls. new rags.
E. de Vries, Troarn, Dunkirk, 90 bls. scrap bagging.
Chase National Bank, Hurricane, Kobe, 5 bls. rags.
A. Siegle Corp., Media, Liverpool, 85 bls. jute waste.
American Express Co., Media, Liverpool, 9 bls. new wool rags.
E. J. Keller Co. Inc., Leerdam, Antwerp, 51 bls. old bagging.
Irving Trust Co., Leerdam, Rotterdam, 47 bls. new cuttings.
J. Eisenberg, Axeldyk, Antwerp, 42 bls. wool rags.
E. Butterworth & Co. Inc., Black Falcon, Antwerp, 87 bls. old bagging.
Jay Bee Fibre Co., Black Falcon, Antwerp, 109 bls. old bagging.
Bankers Trust Co., Black Falcon, Antwerp, 96 bls. rags.
Glant Co., Oriente, Havana, 74 bls. rags.
H. Adlerstein, Henry Stevenson, Venice, 122 bls. jute rags.
(———), Corona, Vera Cruz, 117 bls. paperstock.

Casein

Industrial Raw Materials Corp., Havorn, Rotterdam, 1874 bags.
P. A. Dunkel, Havorn, Rotterdam, 367 bags (prime lactic).
G. Lippelgoes, Havorn, Rotterdam, 143 bags (prime lactic).
American Cyanamid Co., Havorn, Hamburg, 300 bags.
National City Bank, Troarn, Bordaux, 120 bags.
Eugenio Lang, Mormactide, Buenos Aires, 1000 bags.

Woodpulp

Parsons & Whittemore, Inc., Stockholm, Gothenburg, 388 bls. woodpulp 54 tons, 120 rolls woodpulp 30 tons, 1 cs. woodpulp samples.
Pagel Horton & Co. Inc., Stockholm, Gothenburg, 1 cs. woodpulp samples.

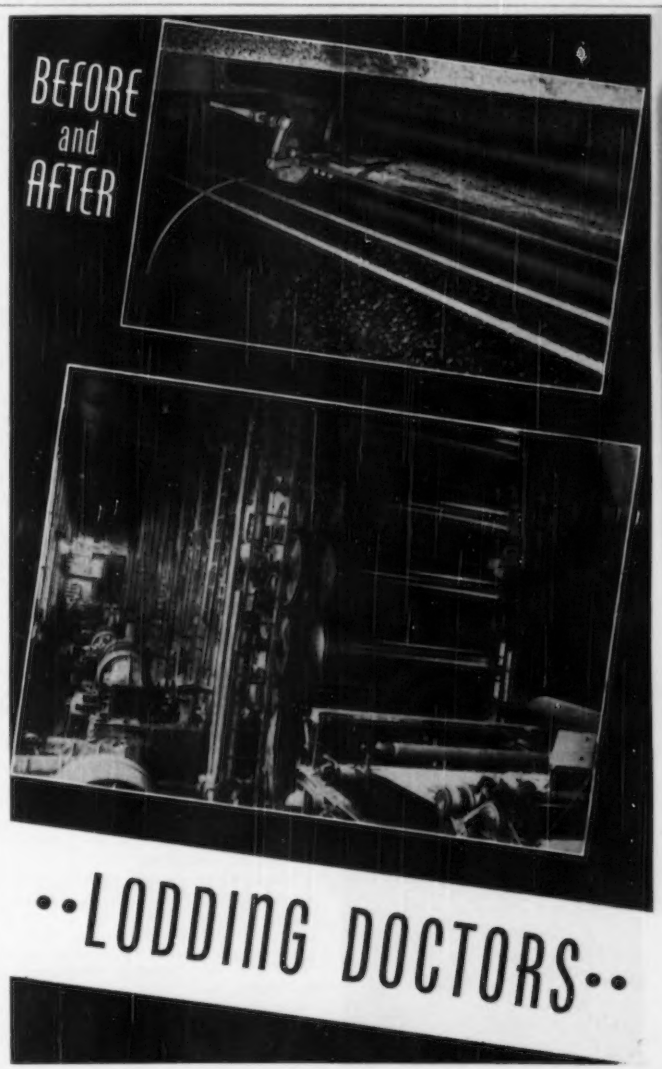
Woodpulp Boards

Jay Madden Corp., Sirius, Helsingfors, 48 rolls (white) 22 tons.

IMPORTS AT BOSTON

Week Ending Oct. 7

American Express Co., American Merchant, Lon-



don, 6 cs. surface coated paper.
Metasco, Inc., American Merchant, London, 34 bls. paper serviettes.
E. Butterworth & Co. Inc., American Forwarder, Manchester, 16 bls. new cuttings.
Stone & Downer Co., American Forwarder, Liverpool, 29 pkgs. wallpaper (samples).
Krasnow Woolstock Co., Axeldyk, Antwerp, 22 bls. wool rags.
F. C. Strype, Axeldyk, Rotterdam, 49 cs. uncoated white printing paper.
First National Bank of Boston, Exiria, Venice, 120 bls. old jute bagging.
(———), Exiria, Venice, 225 bls. old cotton rags.

IMPORTS AT PHILADELPHIA

Week Ending Oct. 7

C. Kurz, American Merchant, London, 5 bls. cotton rags.
D. Galloway, American Forwarder, Liverpool, 66 bls. jute waste.
F. H. Paul & Stein Bros., Troarn, Havre, 300 bags casein.
Bank of N. Y. Trust Co., Exiria, Venice, 170 bls. old linen cuttings.

IMPORTS AT BALTIMORE

Week Ending Oct. 7

Bunge Pulp & Paper Co., Exiria, Trieste, 475 bls. chemical pulp.

IMPORTS AT NORFOLK

Week Ending Oct. 7

Railway Supply & Manufacturing Co., Havorn, Bremen, 99 bls. jute waste.
Dixie Jute Bagging Co., American Forwarder, Manchester, 84 bls. scrap bagging.

TREE FARM ACREAGE

WASHINGTON, D. C.— The United States now has more than 21 million acres of privately owned forestland dedicated to continuing production of forest crops, according to American Forest Products Industries.

Called Tree Farms, these woodlands are certified under the American Tree Farm System for meeting high standards of forest management and production. Tree Farms are certified in 28 states with New Hampshire slated to join the program early in October. September totals show 2,642 Tree Farms totaling 21,642,269 acres of well managed timberland.

Half a million acres under management of the Union Bag & Paper Corp. were certified in Georgia in August. The newly-launched Tree Farm program in California's redwood region is expected to add 100,000 acres next month.

While the Nation's Tree Farm acreage continues to expand, rigid management standards maintained in the member states have been responsible for dropping a quarter million acres of once certified lands from the program since 1941. According to J. C. McClellan, chief forester for American Forest Products Industries, 36 certificates of Tree Farms in Alabama and Mississippi were revoked in the past two months.

"In all cases, these properties were dropped from the program for failure to maintain required management standards or because of changes in ownership," Mr. McClellan said.

THE H. K. FERGUSON COMPANY

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Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys

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120 S. La Salle St., Chicago 2975 San Fernando Road, Los Angeles 27 E. 12th St., Chattanooga

FOREST MANAGEMENT LICENSE

VANCOUVER, B. C.—Crowe Gonnason Co. of Victoria, B. C., have made application for a forest management license covering 30,000 acres in the Nootka Sound area.

Application was made for an area containing some 750 million feet board measure of standing timber following return of company timber cruisers from the Nootka area.

A spokesman of the Department of Lands and Forests said the application would have to await the return from Europe, October 1, of the minister, E. T. Kenney, and the deputy minister, C. D. Orchard.

It overlaps an area for which Tahsis Logging Co. had previously applied.

VIVID WARNING

VANCOUVER, B. C. — Attention is vividly focused on the danger of dropping cigarettes from automobiles in timber country by a dramatic sign erected by the B. C. Forest Service in Manning Park on the Hope-Princeton Highway. On what is known as the Manning Park gallows a huge cigarette is shown hanging from the cross piece.

The sign below reads "The Guy Who Dropped It Should Also Be Hung," while at the bottom in large letters is the message "Prevent Forest Fires." The sign is one of a number of dramatized signs introduced in B. C. parks by the Forest Service Branch of the B. C. government.

INCREASED EMPLOYMENT

WASHINGTON, D. C. — Employment has risen in almost all phases of business and industry as a result of the war impetus, Robert C. Goodwin, director of the Bureau of Employment and Security of the Labor Department, reported this week.

"Pressure on an already tightened labor market will be increased as defense production moves toward a peak," he continued.

Most of the earlier gains were the result of anticipatory buying of civilian goods, he said, and hiring to meet defense production needs was only beginning to gather momentum in late July and early August. However, employment rose rapidly as production schedules for existing contracts was speeded in some areas to clear the way for anticipated new demands of the war.

While available labor supply was being curtailed by such developments, said Mr. Goodwin, it was also being augmented by reentry into the labor market of women workers and older personnel, particularly in the West Coast centers, and to a varying degree elsewhere. There has also been some in-rush of potential workers to areas where employment opportunities were anticipated. Another result of the Korean situation has been a hiring ban in some localities on draft-age men.

"Reports from major industrial areas throughout the country attest to growing scarcities of skilled labor, particularly in metal-working and construction activities and for various types of mechanics and repairmen. The increase in skilled manpower needs is shown by recent inventories of job openings in local offices of State employment services.

"Skilled openings nearly tripled in the last week in August," he added, particularly for such workers as all-round mechanics, machinists and shop-setters, skilled machine operators, etc.

However, despite troublesome shortages, it was reported, relaxation of hiring specifications has not occurred to any great extent; specifications as to age, sex, and experience remained rigid at the time of the survey, it was stated, although indications were appearing that employers were "on the threshold of lowering them."

NEW PAPER USES

PAPER PARACHUTE

A new, improved paper parachute is claimed to have many uses and stand up under storage conditions. According to a recent patent (R. Anzalone, U. S. Patent 2,516,444, July, 1950), the paper for the parachute is treated with 1 to 4½ parts of glycerine in 100 parts of commercial alcohol. After the paper is thoroughly saturated, the excess solution is removed and the alcohol is evaporated from the paper. It is claimed that paper treated this way may be folded and tightly packed for storage without damage to the paper or cracking at the folds.

INSULATED BAG

Dial and Dine, a successful catering service in New York City, claim that keeping coffee hot until it reached the customers was the first and most difficult problem facing its management.

WITH OUR SALES FORCE COVERING FIVE STATES we are in a position to do an excellent job for any mill interested in carload tonnage.

Excellent established contacts in Southern New Jersey, Eastern Pennsylvania, Maryland, District of Columbia and Virginia assure you of an outlet for contract tonnage to converters.

Full investigation of our organization is invited. Write or wire Box No. 50-496, care Paper Trade Journal. N-2

They solved it with a unique bag developed by Union Bag and Paper Corp. Of duplex construction, the bag's inner liner is made from Union's special Scutan paper, which has the necessary insulating characteristics. In addition to keeping coffee and other foods hot, the bags work equally well in keeping refrigerated food products cold. Dial and Dine use them to purvey ice cream, soft drinks, desserts, and salad dishes. It is reported that these bags keep food and liquid hot or cold for as long as two hours.

Union Bag and Paper Corp. claim that these bags offer several other advantages in that they cost less than competitive insulated bags, can be printed up to 3 colors—as such they provide an inexpensive advertising medium, and are easy to fill and stand upright because of their third dimensional construction.

ICE BAGS

An economical and efficient method of refrigerating produce during transit has recently been evolved. The Research and Development Department of the Atlantic Commission Co. and the Union Bag and Paper Corp. worked together to form a specially constructed ice bag which was placed in cartons between layers of processed produce items packed in transparent film bags. Made from 50-lb. Kraft paper, the bag is coated with polyethylene on the inner side of the sheet. After filling with 5 pounds of hydro ice, the bag is closed on a regular heat sealer without any adaptations or machine changes. The bag is then placed in the master carton.

During transit, the ice naturally melts. The bag, however, contains the water, thus keeping the packages and master carton from disintegrating. All this time, the ice and then the melted water constantly absorb the heat from the produce.

These ice bags also offer another plus feature. In those retail outlets not equipped with refrigerated counters, the bags can be placed overnight in the frozen food lockers to refreeze the water. Next day they can be placed on the produce counters with the packages displayed on top of them. Produce deterioration is held off that much longer.

FURNITURE FRAMES

Paper chairs and sofas may be coming your way soon, for sturdy, lower-cost furniture.

The understructure will be made of paper, in a new process developed at Armour Research Foundation of Illinois Institute of Technology. The regular upholstery and coverings would go over it, just as they now do over frames made of wood.

It takes a skilled workman about seven hours to glue pieces of wood together to form the understructure for an upholstered chair or sofa, but the paper understructure can be formed in 10 minutes, in a big saving of labor costs and of wood, said Clark E. Thorp, chairman of the chemistry and chemical department. The paper structure is as strong as wood, he added.

A slurry of paper pulp is placed in a tank and kept stirred or agitated. Underneath is a screen mat, shaped to the desired form for the sofa or armchair understructure. A vacuum pulls pieces of paper fiber down from the tank onto the screen. Thousands of the fibers become interwoven around each other on the mat, forming a solid layer a quarter to half an inch thick. This one-piece framework then is impregnated with resins for more strength and for a smooth finish. It is then ready to be upholstered and covered.

The fiber frame is as strong as any wood and stronger than plywood, Mr. Thorp said. He said it will take screws and staples, and will stand up under heavy blows better than wood.

PILLOW PACKAGE

The new Airfoam Pillow just introduced by Goodyear Tire and Rubber Co. is packaged in a five-color full-telescope carton made by American Coating Mills, Division of Owens-Illinois Glass Co.

The carton, which measures 24 by 16 by 5½ inches, serves both as carrying container for the pillow and as display. Five-color printing and a varnished surface provide life-like photographic reproduction with exceptional

PEDIGREED DOGS

THE BEAGLE — These merry little fellows with a musical tongue are always ready for a run after a rabbit. They are used in packs and you are supposed to keep up with them on foot.

The DRAPER Felt

The Felt with a Pedigree

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASSACHUSETTS

RALPH E. BRIGGS, *Sales Manager*

BRADFORD WEST, *Pittsfield, Mass.* WILLIAM N. CONNOR, *Jr., Canton, Mass.* L. H. BREYFOGLE, *Kalamazoo, Mich.*
WALTER A. SALMONSON, *2514 Northeast 59th Ave., Portland, Oregon* L. L. GRIFFITHS, *Jr., Kalamazoo, Mich.*
HAROLD H. FISH, *Syracuse, N. Y.*

NEW MATERIALS

point-of-purchase display value. The carton, of full-telescope construction with stitched ends and tucked corners, is easy to handle and carry. It is made of .028 white clay-coated boxboard, with Kraft back for strength.

Both boxboard and carton were manufactured at the Elkhart, Ind., plant of American Coating Mills.

JAN Packaging Adhesives

A new line of improved water-resistant resin adhesives has been marketed to meet the joint U. S. Army and Navy packaging specifications, JAN-P-101. Although each grade meets specification strength and water immersion requirements, the speed of set of each adhesive has been designed to fit regular industrial packaging and case sealing equipment. The fast setting varieties for machine use are slightly higher in cost than those grades which serve by hand brush application alone. Complete line has been tested by approved laboratories, and the manufacture supplies certification of their compliance with Government requirements.

Flintsize 33C

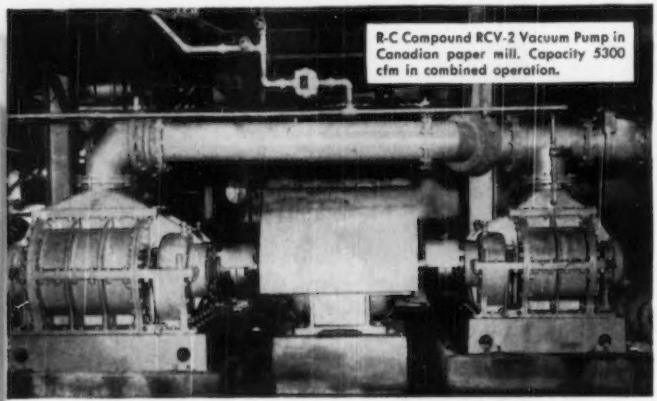
Flintsize 33C is an aqueous asphalt dispersion for fibre products, paper, boxboards, etc. Described as a thin brownish liquid which does alter the natural color of kraft or jute, it imparts water resistance in almost direct proportion to the amount of size used. The use of 4 to 6 gallons per ton gives 2.8 grams immersion number on test chip by standard test, it is claimed. Quick and complete dispersion follows its addition to the pulp with no staining or filling of felts and wires, the manufacturer states. Also may be added at any point in the pulping system that affords good agitation and mixing prior to the addition of alum.

Acrylic Polymers

A series of acrylic polymers is announced. These modified sodium polyacrylates are water-soluble anionic colloids, and are available as clear straw-colored aqueous solutions. These thickening, suspending, stabilizing and film-forming properties are described in a technical data bulletin just released.

Alkor 5E

Alkor 5E is described as the nearest thing to a universal corrosion-resistant cement. Inert to all solvents, alkalies and non-oxidizing acids, it shows no appreciable shrinkage on setting; has no obnoxious odors; excellent workability; is easily tooled; its adhesion to wire-cut brick is greater than 500 psi; tensile strength 1500 psi; compressive strength 15,000 psi; heat accelerates setting only; no fumes or smoke; sets in less than 24 hours at 70°F.



R-C Compound RCV-2 Vacuum Pump in Canadian paper mill. Capacity 5300 cfm in combined operation.

HAVE YOU A VACUUM PUMP PROBLEM?

Then call on ROOTS-CONNERSVILLE for a wide line of standard sizes, built specially for paper mills.

For many years, Roots-Connersville has supplied cycloidal vacuum pumps for use on suction rolls, flat boxes and felt conditioners. Their long-time, excellent performance is the result of these important features:

High volumetric efficiencies—accurately maintained clearances, effectively sealed by water, insure high efficiencies; air being handled can be dry, or contain vapors or liquids.

Low friction losses—due to no contact between impellers or impellers and casings.

Higher speeds—permitting direct connection to standard motors, saving first cost, space and weight.

Flexibility—to meet varying vacuum requirements; suction automatically created to overcome resistance in system.

Durability and dependability—simplified design and construction for long-time, attention-free operation.

When planning replacements or new installations, consult Roots-Connersville for a permanent solution of your problems.

ROOTS-CONNERSVILLE BLOWER CORPORATION
510 River Avenue, Connersville, Indiana

ROOTS-CONNERSVILLE
BLOWER BUILDERS SINCE 1854
ONE OF THE DRESSER INDUSTRIES

NEW LITERATURE

National Planning Assn. Booklet, price $1.00, "Causes of Industrial Peace Under Collective Bargaining." Case Study No. 8 on Marathon Corp. and Seven Labor Unions.

The Brookings Institution. Book, "The Dynamic Economy." Price $2.00, 235 p. by Harold G. Moulton. Dramatizes the story of American industrial progress over the last century, and policy requirements for continued economic advancement.

Pennsylvania Salt Mfg. Co. Book, "Prologue to Tomorrow," by Robert Keith Leavitt. 100 years of Pennsalt Mfg. Co. and its individuality of character as part of the "American way."

Journal of the Society of Motion Picture Engineers. Volume 2, "High-Speed Photography." Classical papers by various experts.

The Dow Chemical Co. Coatings Technical Service, Bulletin CTS-9 1M 650, "Ethocel Emulsions"; Bulletin CTS-6 15C 650, "Dow Latex 744," technical data bulletins.

Nat'l. Bureau of Standards. Analytical Chemistry, 22,455, (1950) "Preparing Cuprammonium Solvent and Cellulose Solutions" by H. F. Launer and W. K. Wilson.

John Wiley & Sons, Inc. Book, "For-

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER AND PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	Sept. 2	Sept. 9	Sept. 16	Sept. 23*	Sept. 30
1950	105.9	84.5	108.9	106.8r	106.6
	Sept. 3	**Sept. 10**	**Sept. 17**	**Sept. 24**	**Oct. 1**
1949	*89.3*	*73.7*	*94.0*	*94.9*	*96.3*

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*89.8*	*88.0*
1950	97.6	101.1‡	102.6‡	100.9‡	101.8‡	103.‡	90.8‡	105.8‡	102.4‡				

* Capacity base increased by 5,348 tons.
r Revised.
‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.2	88.0	88.4	100.6	103.7	96.9	86.2	100.7
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	88.0	

PAPERBOARD OPERATING RATIOS†

	Sept. 2	Sept. 9	Sept. 16	Sept. 23	Sept. 30
1950	100	81	100	101	103
	Sept. 3	**Sept. 10**	**Sept. 24**	**Sept. 24**	**Oct. 1**
1949	*89*	*72*	*92*	*91*	*94*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*93*	*83*	*85*
1950	88	92	91	92	91	94	82	100	96				

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.
† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

est Products," price $5.00, 399 pp., illustrated, by Nelson C. Brown, N.Y.S. College of Forestry. Covers the harvesting, processing and marketing of materials other than lumber, from a technical and economic viewpoint.

John Wiley & Sons, Inc. Book, "Unit Operations," price $7.50, 612 pp., 586 illustrations, edited by George Granger Brown, Professor of Chemical Engineering, University of Michigan. Twelve leading authorities present a comprehensive treatment of modern process operations.

Baldwin Belting, Inc. Catalog Section, "Baldwin Brown or White Supertex Belting." Provides applications, construction and technical specifications table.

The Bristol Co. Pamphlet, "Quick Facts About the Latest Development in Automatic Control Instruments." Features Series 500 Air-Operated Controllers.

The Lincoln Electric Co. Bulletin, "Manual Lincolnweld." Introduces advancement in shielded arc welding.

Foster D. Snell, Inc. Brochure, "Research Facilities Without Capital Investment." A presentation of research as offered for industry.

American Hoist & Derrick Co. Catalog 200-D-3, "American Steel Derricks." Features Guy Stiffleg Steel Erector Barge.

Philadelphia Quartz Co. Vol. 30, No. 9, "Silicate P's & Q's."

Harbison-Walker Refractories Co. Book, "Modern Refractory Practice," 3rd edition, 440 pp. illustrated. A practical engineering book, technical treatise, and catalog of manufacturer's products.

OBITUARIES

Russell F. Attridge, 63, died October 4. Mr. Attridge has been associated with Johnson, Carvell & Murphy of Los Angeles, Calif., for the past 45 years, and was manager of the paper department for 25 years.

Philip Baker, superintendent of Schmidt & Ault Paper Co., died October 5 at the York (Pa.) Hospital.

Mr. Baker became associated with Schmidt & Ault on April 5, 1927, and became superintendent on April 1, 1943. Mr. Baker was a member of the American Pulp and Paper Mill Superintendents' Assn., Inc.

He is survived by his widow, Edith; two daughters, Mrs. Edith Doreen Myers, and Delores Jean; three brothers, Sidney, Lewis and George; and a sister, Mrs. Herman King.

Paul A. Clement, Sr., 81, president of the Atlanta Box Factory, Inc., Atlanta Ga., died suddenly October 1.

Mr. Clement, a pioneer in the box manufacturing business in the Southeast, founded the local firm in 1897. He was active in civic affairs for many years.

Surviving are his widow, a son and a daughter.

Earle S. Henningsen, 60, retiring manager of engineering of General Electric's Large Motor and Generator Divisions at Schenectady, N.Y., died September 23 at Easton Memorial Hospital, Easton, Md., after a brief illness.

A pioneer in the development of alternating-current machinery, Mr. Henningsen was to have retired officially October 1 after 38 years' service with G. E.

Paul Jones, 71, retired Seattle wholesale paper dealer, died suddenly September 23 in his home in Seattle, Wash.

Mr. Jones was head of his own company, Paul Jones & Co., until three years ago; when he sold his business to the West Coast Paper Co. and retired because of illness.

Mr. Jones was secretary-treasurer of Blake, Moffitt & Towne, a paper firm, before he started his own business in 1924.

Surviving are his widow, Helen M.; a daughter, Janet M. Jones, and two sisters, Mrs. C. D. Bruun, and Mrs. J. A. Marshall.

THE PULP & PAPER TRADING CO.
21 EAST 40TH STREET, NEW YORK 16 — LEXINGTON 2-8640
New England Representative—CHARLES J. BROWN
131 State Street, Boston 9, Mass.—Tel.: Richmond 2-2332
TWX (Teletype) N. Y. 1-584

Rogers PAPERS
Folding Bristol. Index Bristol. Au Sable Bristol. Mill Blanks. Thindex Bristol. Antique Cover. Leathermade Cover. Ninety-leather Cover. Ledger. Bond. Ninepoint Postcard Whiteface Tag. Folder Tag. Manila Tag.
Sulphite Converting Specialties

Distributors for Pulp made by:
Consolidated Paper Sales, Ltd.
Montreal, Canada
Laurentide & Port Alfred
Unbleached Sulphite and Wayagamack Kraft

CLEARING HOUSE

HELP WANTED

PAPER EXPORTER

Long established, important company with excellent sources of supply, offers exceptional opportunity to experienced paper executive. Manage sales, purchasing . . . Please answer fully. Replies confidential.

Box 50-492, Paper Trade Journal, 15 West 47th St., New York City
O-12

MEN WANTED
POSITIONS OPEN

We can place—general superintendent Cylinder board and Fourdrinier corrugated mill; superintendent Cylinder machine specialty paper mill; managers, superintendents and assistant superintendents for roofing felt, asbestos cement plants; office manager; accountant.

Master mechanics, plant engineers, draftsmen and head draftsmen; chief power engineer, 2nd shift, large New England mill; Cylinder machine tour boss, board and test liner; Cylinder machine foreman roofing felt; foreman coated board papers; beater engineers; salesman for New York City for newsprint mill; chemists, chemical engineers and laboratory men; machine tenders and back tenders.

We invite correspondence (confidential) with executives seeking positions and with employers seeking new personnel.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington Street, Boston, Mass.
O-12

"*CONVERTING FOREMAN* EXPERIENCED IN CONVERSION OF TOILET TISSUE, TOWELS, NAPKINS, SHEETING, CUTTING LIGHTWEIGHTS. FULL RESUME PLEASE TO BOX NO. 50-486, CARE PAPER TRADE JOURNAL.
O-26

Excellent opening for young man 30 to 40 as Sales Engineer with Pulp and Paper machinery manufacturer. Must be technical graduate with general knowledge of pulp and paper industry and preferably with some sales experience. State age, education, experience, etc. in letter to Box 50-485 care of Paper Trade Journal.
O-19

TOUR BOSS wanted for Board Mill in East. Must have experience on folding grades. Address Box 50-473 care Paper Trade Journal.
TF

Assistant Superintendent, fine papers; Chemists for paper mills; Color Man for Night Supervisor; Night Superintendent, good on colors; Several Salesmen for paper mills; Superintendent for 1-Machine mill. Other attractive positions open.

PERSONNEL SERVICE ASSOC., 115 State Street, Springfield 3, Mass. Specialized Confidential Placement Service.
O-12

ELECTRICAL DRAFTSMAN

Four machine Wisconsin paper mill has opening for ambitious young Electrical Engineer. Should have paper mill or similar background and knowledge of N.E.C. and be familiar with plant electrical requirements, power and control equipment and wiring, both A.C. and D.C. Industrial electronic experience helpful. Salary based on individual ability with excellent opportunity for advancement. Replies confidential. Write Box 50-484, care Paper Trade Journal.
O-26

TECHNICAL SALESMAN
PAPER CONVERTING MACHINERY

Experienced man wanted for responsible sales engineering position for special paper converting machinery. Principal equipment being winders, coating machinery, embossers, laminators etc. All replies strictly confidential. Location in upstate New York.

Box No. 50-469 care Paper Trade Journal.
O-19

WANTED—Machine Tenders, Back Tenders, Cylinder machines. STOCKPORT PAPER CORPORATION, Stockport, New York.
O-12

TOUR BOSS for one machine board mill in New York State. Must be thoroughly experienced on high grade folding box boards. Please submit references in first letter stating experience, age, etc. Address Box 50-457 care Paper Trade Journal.
O-12

HELP WANTED

PRODUCTION CHIEF

Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 50-443, care Paper Trade Journal.
TF

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

MASTER MECHANIC

For converting mill near Madison, Wisconsin. All around practical man wanted with plenty of experience and know-how. Replies confidential. Our employees know of this ad. Write Box 50-481, care Paper Trade Journal.
O-26

MILLWRIGHT SUPERVISOR

Fox River Valley, Wisconsin, paper mill has opening for ambitious young man with technical training and practical experience in millwright work. Will be understudy to boss millwright who has crew of 40 to 50 men. Plenty of opportunity for advancement. Replies confidential. Write Box 50-474 care Paper Trade Journal.
O-26

BACK TENDER—thoroughly experienced on all folding boards. Unusually high weekly salary, secure future. Outline full background and personal data in first letter. Mill located in South. Address Box 50-451 care Paper Trade Journal.
O-12

WANTED BY PAPER MILL in Mid-West: Back Tenders or experienced third hands willing to learn Back-Tender's job. Also Machine Tenders, or Back Tenders willing to learn Machine Tender's job. Address Box 50-465 care Paper Trade Journal.
O-19

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 50-378 care Paper Trade Journal.
TF

WANTED—NIGHT BOSS for a one machine board mill. Must be experienced in the manufacture of jute liner and container chip. Mill located in the Middle West. Excellent salary and many employee benefits. Address Box 50-482 care Paper Trade Journal.
O-26

RATES FOR CLASSIFIED ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

HELP WANTED

WANTED—Experienced Pulp and Paper Mill Engineer, location Northeast. Address Box 50-488 care Paper Trade Journal. O-19

WANTED—PROJECT ENGINEER—California, Process Plant Design and Project Engineer. Experience in pulp and paper and building materials plants preferred. Minimum five years experience and engineering degree. Competitive salary depending upon individual qualifications. Address Box 50-487 care Paper Trade Journal. O-12

SITUATIONS WANTED

BAG SPECIALTIES—Satchel-bottom, roll-cut envelope style, flat & square bags fabricated from cellulose film and pliofilm. Heavy duty flat & square, sacks and multi-wall. Anilox, aniline, letter-press and gravure printing. Excellent record of waste reduction, increased quality and production. Engineering background engendering design of many special converting units and improvements. Personnel training. Capable assume complete plant operation responsibility. Address Box 50-495 care Paper Trade Journal. O-19

SITUATIONS WANTED

SUPERINTENDENT 25 YEARS OF PRACTICAL EXPERIENCE

on Cylinders and Fourdriniers manufacturing the following grades: book, writing, bond, ledgers, offset, coating, kraft of all kinds, manilas, drinking cup, index, bristol, envelope, tag board, folding box board, tabulating and surface sizing. Can get quality and production. Best of references.

Box 50-462, care The Paper Trade Journal. O-19

EXECUTIVE ACCOUNTANT

Capable organizational and supervisory ability. 20 years administrative experience in folding carton, paperboard and printing industry. Available immediately. Box 50-440 care Paper Trade Journal. O-19

SITUATIONS WANTED

EXPERIENCED KRAFT PULP AND PAPER MILL ENGINEER AND OPERATOR

wants to contact mills.

Cement Sacks, Gumming, Envelopes and other Specialties.

Address Box 50-439 care Paper Trade Journal. N-2

AVAILABLE—Exceptionally versatile young executive. Many years experience all phases of manufacturing specialty bags, envelopes—cellophane, glassine, kraft, combination and non-transparent papers; also latest films like Polyethylene. Administration—production—promotion—sales management. Address Box 50-477 care Paper Trade Journal. O-19

GENERAL MANAGER or SUPERINTENDENT—25 years experience making book, bond, vellum, offset, ledger, envelope, snap, coil wrap, carbonizing, interleafing and others too numerous to mention. Am cost minded, very good labor relations. Can guarantee quality and production. Now running four machines specialty mill, but desire change. Best of references. Address Box 50-478 care Paper Trade Journal. O-19

ROSS PAPER MACHINERY CO.
265 PASSAIC STREET
NEWARK 4, N. J.
CONVERTING PAPER MAKING EQUIPMENT
NEW, USED, REBUILT PAPER AND PULP MACHINERY

MACHINERY WANTED
For outright purchase—
Paper Machines, Paper Mill Machinery and Converting Equipment.

AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY

BEATERS
1—Dayton High Speed—iron tub—60 tons per day.

BELTING—NEW
87 feet 8" 13 ply Goodyear Rubber Belting.
353 feet 8" 4 ply Silver Duck Transmission belt.
177 feet 10" 6 ply Silver Duck Transmission Belt.

BLOWERS
8—Blowers and Mill Exhausters.

CALENDER ROLLS
46 Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS
1—112" face 7 roll.

CONVEYOR
1—18½ ft. long x 30" wide—with motor.

CORE CUTTERS
1—Cameron with 1" x 1½" mandrels.

CYLINDER MOLDS
1—134" face x 36" diameter, with stainless steel shafts.
1—74" face x 36" diameter.

DRYERS
5—143" face x 48" diameter.
5—124" face x 48" diameter.
5—80" face x 36" diameter.
1—72" face x 48" diameter—with gear.
1—64" face x 36" diameter.
1—120" face x 10" diameter—Baby Dryer.
56—126" face x 42" diameter.
4—90" face x 36" diameter.
1—102" face x 48" diameter, with bearings.
3—100" face x 48" diameter—with gears and bearings.
3—110" face x 42" diameter with bearings and gears.
1—117" face x 48" diameter.
1—54" face x 36" diameter.

ELECTRIC PAPER MACHINE DRIVES
1—G. E. 55/110 with G. E. Generator, Exciter and Controller.
1—G. E. 80/100 with G. E. Generator, Exciter and Controller.

FLAT SCREENS
1—Beloit—4 plate.

FOURDRINIER SECTIONS
1—P & J 156" x 80 ft. ball bearing. Complete from inlet to 22" diameter suction couch. Brass and Rubber covered table rolls. 6 Brass Suction Boxes operated at 1000' per minute.

HYDRAFINER
1—Ditts Hydrafiner with anti-friction bearings—200 h.p. motor.

INLETS
1—96" All bronze—adjustable.

JORDANS
1—#3 Miami, for motor drive.
3—Jones Majestics with base and couplings—
2—#3 Appleton with base and coupling.
1—Dilion Herne, Stainless steel ½" filling.
1— Jones Majestic, Stainless Steel Filling.

LAMINATOR
1—Downingtown 52" Laminator.

MOTORS
1—Reliance 25 h.p. ball bearing, 550 v., 3 phase, 60 cycle—1750 r.p.m.

PULLEYS
30—Split cast iron tapered Pulleys.

PULP EQUIPMENT
1—Mitts & Merrill #17 Pulpwood chipper.
1—96" Murray 4 knife ball bearing Chipper, with 150 h.p. synchronous motor.

PUMPS
41—Centrifugal Pumps, open & closed impellers. Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year. Also new Gould Pumps.
1—Worthington Sump Pump—75 g.p.m. 60' head with General Electric 2 h.p. 220-440 v. motor.
1—Worthington Sump Pump—1500 g.p.m. 15' head with General Electric 7½ h.p. 220-440 v. motor.

REDUCERS
1—Link Belt 40 h.p. Ratio 2.2-1, 500 r.p.m.-227 r.p.m.
1—Falk 25 h.p. Ratio 300-1, 900 r.p.m.-3 r.p.m.

REELS
1—Beloit 132" two bowl upright reel.
1—Beloit 116" two bowl upright reel.

ROLLS—PRESS, COUCH, etc.
32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS
1—#2 Leith-walk-ball bearing.
2—#2A Bird with Copper vats, enclosed drive.

SCREW PRESSES
1—Valley Voith Screw Press Size 2A, with new spare sets of plates.

SHEETERS
1—Hamblet 67" single knife with 8 roll backstand and 4 slitters.
1—Finlay 90" with 6 roll back stand, motor and 4 slitters.
1—42" Dillon with 8 roll backstand.
1—48" Kidder Spot Sheeter.
1—Beloit 72" Heavy Duty Duplex Sheeter.

SHREDDERS
1—American 37" Hamermill, anti-friction bearing.
1—Sprout Waldron Cutter—type F-11—30" knives. Used 30 days.

SLITTERS AND WINDERS
1—Pusey & Jones 160" high speed slitters and rewinders.
2—Langston 40" with motor and 25 sets shear cut slitters.

STUFF PUMPS
1—Shartle 8½x12 Triplex—Silent Chain Drive.
1—Shartle 10 x 20 Triplex.

SUCTION COUCH ROLLS
1—Millspaugh 22" diameter x 138¾" suction face.
1—Millspaugh 22" diameter x 158" drilled face.
1—Millspaugh 98" drilled face x 22" diameter.
1—Beloit 84" face x 18" diameter—ball bearing.

SUCTION PRESS ROLLS
1—Millspaugh 131" drilled face x 22" diameter with stand & drive.

SUPERCALENDERS
1—66" Perkins 7 roll—with all electric equipment.

THICKENERS
1—80" Thickener—new wood vat.
1—Bird Thickener Iron End Vats—Cylinder 72" face x 42" diameter, with Shower and Felt take off roll.
1—IMPCO 92" face x 42" diameter ball bearing cylinder—18" rubber couch—iron end vat.

TRIMMERS
1—62" Oswego.

VATS—STAINLESS STEEL
2—Dual Flow Stainless Steel vats for cylinders 48" diameter x 153" face—with stands for couches.

VACUUM PUMP
1—24 Nash Hytor with 10 h.p. motor.

WET MACHINES
1—84" Wet machine—new vat.

SITUATIONS WANTED

MANAGEMENT EXECUTIVE, early forties, established record paper converting and printing. Seeking New England location. Chiefly interested in organizational problems with emphasis on production, industrial relations, operating management. Salary five figures. Address Box 50-479 care Paper Trade Journal. O-19

SALES EXECUTIVE — 48, Member T.A.P.P.I., S.A.P.I., wide acquaintance with publishers, Converters, Merchants, Printers. Experienced Book, Bond, Coated, Groundwood, Sulphate. Capable manager. Personable. Aggressive. Available October 15. Address Box 50-404 care Paper Trade Journal. TF

FOR SALE

FOR SALE

4—E. D. Jones Beaters with rolls 56" Dia., 60" face with 2000# capacity iron tubs. Each beater equipped with two cylinder Washers complete with hoisting mechanism. New fillings in rolls. All excellent condition.

OSBORNE PAPER MILL COMPANY
FULTON, N. Y. **TEL. 54**
0-12

Of Interest to Paper Mills

We own and offer:

68" Oswego hand clamp mill-type Power Cutter, with power back-gauge.
38" Acme late model & 40" C — P Power Cutters.
65" Hamblet Sheeter with layboy.
100" Horne Sheeter with back-stand.
58" Finley Sheeter.
48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
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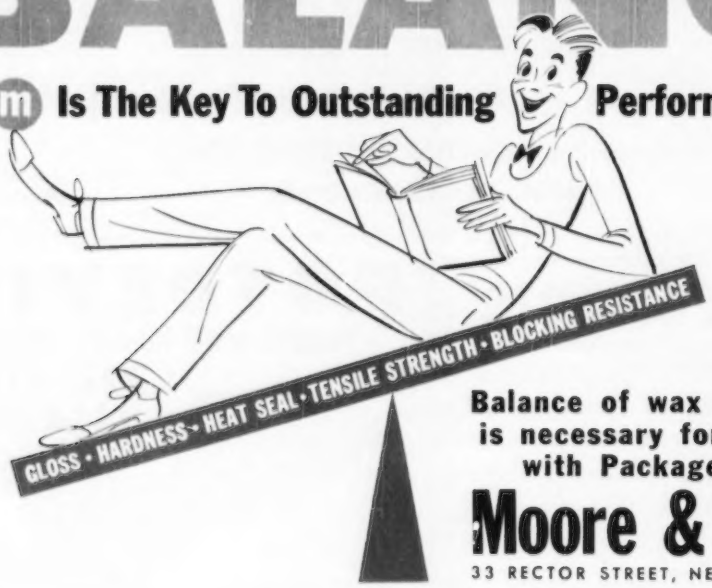

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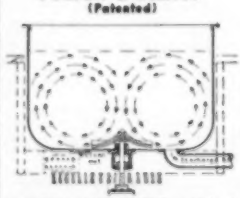

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Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

DRIERS
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
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M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
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Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wallerstein Co., Inc.

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Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
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FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

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Leeds & Northrup
Merrick Scale Mfg. Co.
The Permutit Company

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Asten-Hill Mfg. Co.
Draper Bros. Corp.
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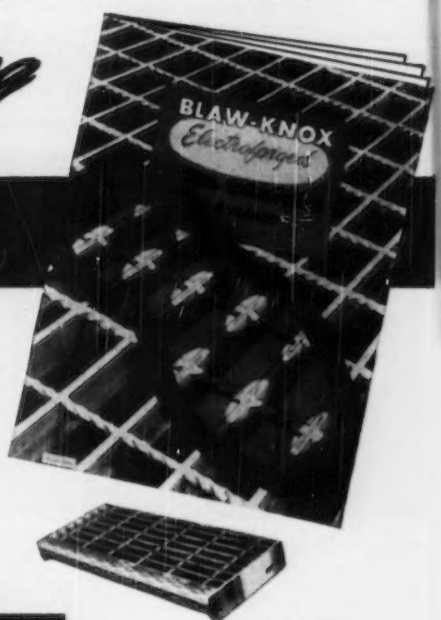

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Of PAPER TRADE JOURNAL, published weekly at East Stroudsburg, Pa., for October 1, 1950.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, George E. Lockwood, 15 West 47th st., New York 19, N. Y.; Editor, Henry J. Perry, 15 West 47th st., New York 19, N. Y.; Managing Editor, R. E. Thuemmes; Business Manager, Arthur E. Gordon, 15 West 47th st., New York 19, N. Y.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above was 6437. (This information is required from daily, weekly, semiweekly and triweekly newspapers only.)

ARTHUR E. GORDON,
(Signature of Business Manager.)

Sworn to and subscribed before me this 27th day of September, 1950.

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(Seal) Notary Public, New York County.

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Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
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Wyandotte Chemicals Corp., Michigan Alkali Div.

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Hardinge Company, Inc.
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Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
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Walworth Company

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Walworth Company

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Norton Co.

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The Sandy Hill Iron & Brass Works

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Towmotor Corp.

FORMATION
Thwing-Albert Instrument Co.

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The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Moore & White Co.
D. J. Murray Mfg. Co.
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Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

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Carthage Machine Co.
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Lobdell Co.
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Westinghouse Electric Corp.

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Leeds & Northrup
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Westinghouse Electric Corp.

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Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Beckman Instruments, Inc.
Bird Machine Company
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W. & L. E. Gurley
E. D. Jones & Sons Co.
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National Technical Laboratories

Taylor Instrument Companies
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National Wax Company

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Fairbanks, Morse & Co.
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Reliance Electric & Engrg. Co.

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PAPER MACHINES
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Moore & White Co.
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
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The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
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Hudson Sharp Machine Co.
Langston Co., Samuel M.

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National Wax Company

PARAFFIN WAX EMULSIONS
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Dilts Machine Wks.
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Gibbs-Brower Company, Inc.
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Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

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National Wax Company

pH METERS
Thwing-Albert Instrument Co.

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Crane Company
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Crane Company
Michigan Steel Casting Co.
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PIPE MARKERS
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General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Nopco Chemical Co.

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Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
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Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

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Shartle Brothers Machine Co.

POPE TYPE REELS
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Testing Machines, Inc.
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Babcock & Wilcox Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co.

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Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
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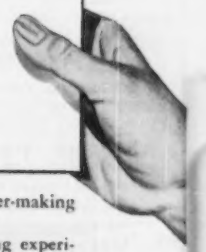

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Paper and Pulp Testing Laboratories

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Black Clawson Company
DeLaval Steam Turbine Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

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Red-Ray Mfg. Co., Inc.

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General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
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Taylor-Stiles & Co.

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Chicago Bridge & Iron Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Anton J. Haug
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
DeZurik Shower Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

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American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co., Resinous Products Div.

ROLLS
Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company
Stowe-Woodward, Inc.

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS
Black Clawson Co.
The Moore & White Co.
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American Cyanamid Company, Industrial Chemicals Division
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Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
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Smith & Winchester Mfg. Co.
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Black Clawson Company
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The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WEB TENSION CONTROL
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John Waldron Corp.

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General Electric Company
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Black Clawson Company
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WETTING AGENTS
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General Dyestuff Corp.
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Rohm & Haas Co.
Wallerstein Co., Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Davis Engineering Corp.

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The Permutit Company
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The Appleton Machine Co.
Black Clawson Company
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Kohler Systems
Langston Co., Samuel M.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler Systems)

WIRE BRUSHES
M. W. Jenkins Sons, Inc.

WIRES
Appleton Wire Works
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Williams-Gray Co.

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Williams-Gray Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.

INDEX TO ADVERTISERS

A

Alexander Brothers —
Allis-Chalmers Mfg. Co. 3
Amercoat Corporation —
American Cyanamid Co., Calco Chemicals Division —
American Cyanamid Co., Industrial Chemicals Division —
American Leather Belting Assn. —
American Paper Mchy. & Engrg. Wks. 66
American Steel & Wire Co. —
Appleton Machine Co., The 47
Appleton Wire Works, Inc. —
Appleton Woolen Mills 25
Armco Drainage & Metal Products, Inc. —
Armco Steel Corp. —
Askania Regulator Co. —
Asten-Hill Mfg. Co. —

B

Babcock & Wilcox Co. 6
Bagley & Sewall Company 23
Bahr Bros. Mfg. Co. —
Bailey Meter Company —
Barrett Oil Company —
Bauer Brothers Co., The —
Beckman Instruments, Inc. —
Beloit Iron Works —
Bird Machine Company —
Birk, F. Paul —
Bixby, R. W., Inc. 62
Black Clawson Company 6
Blaw-Knox Company 69
Bowsher, N. P., Company —
Brown Company —
Bulkley, Dunton Pulp Co. —
Bunge Pulp & Paper Co. —

C

Cambridge Instrument Co. —
Cameron Machine Co. —
Canadian Newsprint Supply Co. —
Carnegie-Illinois Steel Corp. 17
Carthage Machine Co. —
Chemipulp Process, Inc. 72
Chicago Bridge & Iron Co. —
Chiksan Company —
Cibe Company —
Clark Equipment Co. —
Classified Advertising 62
Cleveland Crane & Engrg. Co. —
Clinton Foods, Inc. —
Cochrane Corporation —
Colledge, E. W. —
Columbia Steel Co. —
Combustion Engineering-Superheater, Inc. —
Corn Products Sales Co. —
Cowles Chemical Co. —
Cowles Company, Inc. —
Crane Company 27
Crucible Steel Corporation of America —
Curlator Corporation —

D

Davis Engineering Corp. —
Deltz Machine Works —
De Laval Steam Turbine Co. —
DeZurik Shower Co. 70
Dilts Machine Works 6
Dorr Company, The —
Dow Chemical Company —
Downingtown Mfg. Co. 2
Draper Brothers Co. 59
duPont, E. I., de Nemours & Co., Electrochemical Dept. —
duPont, E. I., de Nemours & Co., Dyestuffs Dept. —
duPont, E. I., de Nemours & Co., Grasselli Chem. Dept. —
duPont, E. I., de Nemours & Co., Polychemicals Dept. —
Duriron Company, The —

E

Ebasco Services, Inc. —
Efficiency Engrg. Co. —
Egan, Frank & Company —
Elixman Paper Core Co. —
English China Clays Sales Corp. —

F

Fairbanks Morse & Co. —
Farrel-Birmingham Co., Inc. —
Ferguson, The H. K., Company 58
Ferro Enamel Corp. —
Fitchburg Screen Plate Co. —

G

Geigy Company —
General Dyestuff Corp. —
General Electric Company —
Gibbs, Ralph E. —
Gibbs-Brower Co. 64
Goodrich Chemical Company 29
Goodrich Co., B. F. —
Goodyear Tire & Rubber Co. —
Goslin-Birmingham Mfg. Co. —
Gotham Ink & Color Co. —
Gottesman & Company —
Green Bay Fdy. & Works —
Grinnell Company, Inc. —
Guest, C. M., & Sons —
Gurley, W. & L. E. —

H

Hagan Corp., (Calgon, Inc.) —
Hall, Thomas W., Co., Inc. 64
Hamblet Machine Co. —
Hardinge Company, Inc. —
Harris-Seybold Co. —
Heppenstall Company —
Hercules Powder Company —
Heyden Chemical Co., Aktivin Div. 15
Hooker Electrochemical Co. —
Huber, J. M., Corp. —
Huburger Company, The —
Hudson Sharp Mfg. Co. 67
Hungerford & Terry, Inc. —
Huyck, F. C., & Sons 39

I

Industrial Brownhoist —
International Nickel Co. —
International Wire Works —

J

Jeffrey Mfg. Company —
Jenkins, M. W., Sons, Inc. —
Johnson Corporation, The —
Johnson, Alvin H., & Co. —
Jones, E. D., & Sons Co. —

K

Kalamazoo Tank & Silo Co. —
Kidder, Peabody & Co. —
Kinsley Chemical Company 72
Knox Woolen Company —

Langston, Samuel M., Co. 21
Lawton, C. A., Company —
Lindsay Wire Weaving Co. —
Link Belt Company 10
Lodell United Company —
Lockport Felt Co. —
Lodding Engineering Co. 57
Loeser, E. W., Company —
Lukens Steel Company 37
Lyddon Company —
Lynch Corporation —

M

Magnus Metal Div., Nat. Lead Co. —
Main, Charles T., Inc. 72
Manchester Machine Co. —
McBride, Edward J., Company —
Mead Sales Company, The —
Meincke, A. M., & Son —
Meisel Press Mfg. Co. —
Merrick Scale Company —
Michigan Steel Casting Co. 72
Monsanto Chemical Company —
Montague Machine Co. —
Moore & Munger 66
Moore & White Co. —
Moorhead Electrical Machinery Co. —
Morden Machines Company —
Morey Paper Mill Supply Co. —
Mount Hope Machinery Co. —
Murray, D. J., Mfg. Co. —

N

Nash Engineering Company —
National Adhesives —
National Aluminate Corp. —
National Aniline Div., Allied Chem. & Dye Corp. —
National Starch Products, Inc. —
National Tube Co. —
National Wax Company —
Newport News Shipbuilding & Dry Dock Co. —
Niagara Alkali Co. —
Nichols Engrg. & Research Co. —
Nopco Chemical Co. 75
Northern Engraving & Mch. Co. —
Norton Company —

O

O'Donoghue, Roderick —

P

Paisley Products, Inc. —
Paper & Industrial Appliances —
Paper & Pulp Testing Laboratories —
Paper Machinery Ltd. —
Parsons & Whittemore —
Perkins, B. F., & Son Co. —
Perkins-Goodwin Company —
Permutit Company, The —
Photovolt Corporation —
Pittsburgh Plate Glass Co. —
Potdevin Machine Co. 65
Powell, William, Company —
Price & Pierce, Ltd. 68
Pulp & Paper Trading Co. 61
Pusey & Jones Corp., The —

R

Raymond, Chas. P., Services, Inc. 62
Railway Supply & Mfg. Co. —
Record Fdy. & Machine Co. —
Red Ray Manufacturing Co., Inc. —
Reichhold Chemicals, Inc. 31
Reidel, Gus, & Son —
Reliance Elec. & Engrg. Co. —
Research Corporation —
Restigouche Co., Ltd. —
Rice Barton Research Corp. —
Rogers, S. C., & Co. —
Rohm & Haas Company —
Roots-Connersville Blower Corp. 60
Ross, J. J., Company —
Ross, J. O., Engrg. Corp. —
Ross Paper Machinery Co. 63
Rust Engineering Co. —

S

Sandusky Fdy. & Mch. Co. —
Sandy Hill Iron & Brass Works —
Shartle Brothers Machine Co. 6
Shuler & Benninghofen 35
Simon, Ltd., Henry —
Sinclair Refining Co. —
Sirrine, J. E., Company —
Smidth, F. L., & Co. —
Smith & Winchester Mfg. Co. —
Socony Vacuum Oil Co., Inc. —
Solvay Sales Div., Allied Chem. & Dye Corp. 71
Sonoco Products Company 72
Squier Corp., The —
Statement of Ownership 70
Stebbins Engrg. & Mfg. Co. —
Stein, Hall & Co., Inc. —
Stickle Steam Specialties Co. —
Stowe Woodward Inc. —
Sun Oil Company —
Sutherland Refiner Corp. —
Swenson Evaporator Co. —

T

Taylor Instrument Co.'s —
Taylor Stiles & Co. —
Tennessee Coal, Iron & R.R. Co. 17
Textile Machine, Inc. 66
Texas Company, The —
Texas Gulf Sulphur Co., Inc. 55
Thomas Flexible Coupling Co. —
Thwing-Albert Instrument Co. —
Tide Water Assoc. Oil Co. 4
Timken Roller Bearing Co. Back Cover
Tissue Converting Co. 72
Titanium Pigment Corp. 49
Towmotor Corporation —

U

United Carbon Co., Inc. —
U. S. Rubber Company 43
U. S. Steel Corp. 17
United States Steel Export Co. 17
United States Steel Supply Co. 17

V

Valley Iron Works Co. 53
Vanderbilt, R. T., Co., Inc. 8
Vapo Systems Co. —
Virginia Smelting Company —

W

Waldron, John, Corporation —
Wallerstein Co., Inc. —
Walworth Company —
Waterbury Felt Co. —
Waterbury, H., & Sons Co. 66
Weber, H. G., & Co., Inc. —
Wellman Engineering Co. —
Western Gear Works —
Western Precipitation Corp. —
Westinghouse Electric Corp. —
West Virginia Pulp & Paper Co. 68
Weyerhaeuser Timber Co. —
Wheeler Roll Company —
Whiting Corporation Front Cover
Williams Apparatus Co. —
Williams Gray Company —
Wyandotte Chemicals Corp. 51

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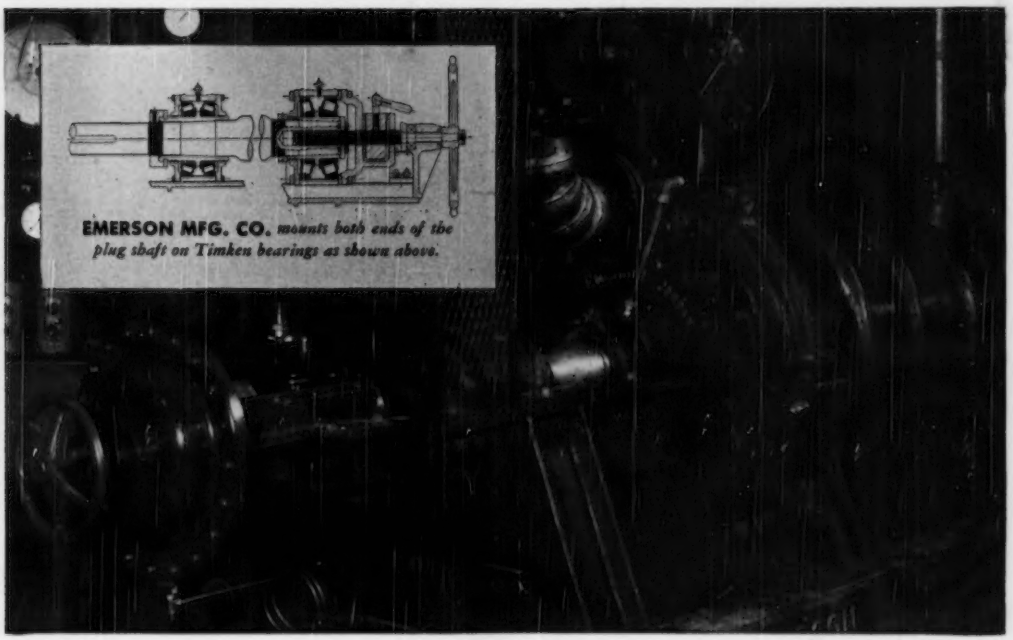

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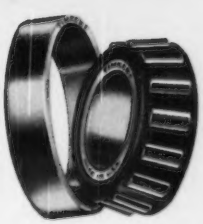

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